United States
Environmental Protection Agency

April 2024
Office of Chemical Safety and
Pollution Prevention

Draft Risk Evaluation for Asbestos Part 2 – Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos

Systematic Review Supplemental File:

Data Extraction Information for Environmental Hazard and Human Health Hazard Epidemiology

CASRN: 1332-21-4

April 2024

This supplemental file contains the data extraction results relevant to the *Draft Risk Evaluation for Asbestos Part 2: Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos*. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (also referred to as '2021 Draft Systematic Review Protocol'). Any updated steps in the systematic review process for data extraction since the publication of the 2021 Draft Systematic Review Protocol are described in the *Draft Risk Evaluation for Asbestos Part 2: Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos – Systematic Review Protocol*. EPA conducted data extraction based on author-reported descriptions and results; additional analyses (*e.g.*, statistical analyses performed during data integration into the risk evaluation) potentially conducted by EPA are not contained in this supplemental file.

Environmental Hazard Data Extraction: As explained in Section 6.4 of the 2021 Draft Systematic Review Protocol, key study details (*e.g.*, exposure duration vs. study duration) were extracted from references that underwent data quality evaluation; these study details are available in the tables below. The study details and respective endpoints were organized by first the relevant habitat (*i.e.*, aquatic vs. terrestrial), followed by taxa categories (*e.g.*, vertebrates, invertebrates, vegetation), taxonomic groups (*e.g.*, fish, amphibian, mammalian, avian, worms, vascular plants), individual species, and finally exposure duration.

All the references that underwent data quality evaluation using the environmental hazard data quality metrics were extracted regardless of metric ranking and are included in this supplemental file. In the environmental hazard data extraction table, for some studies there were hazard health outcomes with multiple health effect levels extracted from the ECOTOXicology Knowledgebase (ECOTOX) database; if all the data for one same health outcome were the same except for the health effect level (*e.g.*, LOEL level), multiple data extraction rows were combined into a single row in the table. All the extracted environmental hazard data described in this supplemental document as well as other additional experimental details for the references identified through systematic review for Asbestos Part 2 will also be available in ECOTOX.

Epidemiological Study Information Extraction: All human health epidemiology references that underwent data quality evaluation and had an OQD of Medium or High were extracted as detailed in Section 6.4 of the 2021 Draft Systematic Review Protocol and *White Paper: Quantitative Human Health Approach to be Applied in the Risk Evaluation for Asbestos Part 2 – Supplemental Evaluation including Legacy Uses and Associated Disposals of Asbestos*. The data extracted include the measured effect or health endpoint, a description of the study population, the specific exposure compound measured and summary levels of exposure, the method of exposure measurement, and a summary of the results. Each health outcome assessed in a reference is extracted separately, and as such, each reference may have more than one record in the data extraction tables, with each record categorized by health outcome.

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Enzyme(s)-Pepsin, Response Site: Stomach)	LOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Cellular (Histology-Congestion,Histological changes, general,Swelling, Response Site: Stomach mucosa)	NR (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12001-29-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Cellular (Cell(s)-Volume, Response Site: Stomach)	LOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12001-29-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Biochemistry-Mucin content, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12001-29-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Enzyme(s)-Pepsin, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12001-29-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Physiology (Physiology-Potential hydrogen, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372

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12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Biochemistry-Nickel content, Response Site: Stomach)	LOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Physiology (Physiology-Potential hydrogen, Response Site: Stomach)	LOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Biochemistry-Mucin content, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12001-29-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Biochemical (Biochemistry-Nickel content, Response Site: Stomach)	LOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Physiology (Physiology-Potential hydrogen, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372
12172-73-5	6 Hour(s), (6 Hour(s))	*Cavia porcellus* (Guinea Pig), Not reported, Not Reported, Laboratory (ITRC colony)	Not reported, Oral (diet, drink, gavage), Gavage, 20 Organism	Unmeasured	0 mg/10 ml /500 mg/10 ml	Cellular (Cell(s)-Volume, Response Site: Stomach)	NOEL (500 mg/10 ml)	Gastrointestinal	Medium	1060372

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Volume, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Cellular (Cell(s)-Cell changes, Response Site: Stomach mucosa)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Biochemistry-Nickel content, Response Site: Stomach wall)	NOEL (500 mg diet)	Mechanistic	Medium	1797399

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12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
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12001-29-5	6 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Enzyme(s)-Pepsin, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	12 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Enzyme(s)-Pepsin, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Biochemistry-Mucin content, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Enzyme(s)-Magnesium adenosine triphosphatase, Response Site: Stomach wall)	NOEL (500 mg diet)	Mechanistic	Medium	1797399

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Biochemistry-Nickel content, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Enzyme(s)-Magnesium adenosine triphosphatase, Response Site: Stomach mucosa)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	12-24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Cellular (Cell(s)-Cell changes, Response Site: Stomach mucosa)	NR (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Biochemistry-Nickel content, Response Site: Stomach mucosa)	LOEL (500 mg diet)	Mechanistic	Medium	1797399

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Volume, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	NOEL (500 mg diet)	Mechanistic	Medium	1797399

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Physiology (Physiology-Potential hydrogen, Response Site: Stomach or rumen fluid)	LOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	24 Hour(s), (24 Hour(s))	*Cavia porcellus* (Guinea Pig), Adult, Not Reported, Laboratory (INDUSTRIAL TOXICOLOGY RESEARCH CENTRE ANIMAL HOUSE COLONY)	No substrate, Oral (diet, drink, gavage), Gavage, 10 Organism	Unmeasured	0 mg diet /500 mg diet	Biochemical (Biochemistry-Nickel content, Response Site: Stomach wall)	NOEL (500 mg diet)	Mechanistic	Medium	1797399
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 245 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Lymphoma,Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Lung(s),Pancreas,Skin, epidermis,Trachea,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 245 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Not reported)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (222-233) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Gastrointestinal tract)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 506 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Lifespan, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 248 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Pancreas,Skin, epidermis,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 503 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (241-245) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Tumor induction,Papilloma, wart, Response Site: Gastrointestinal tract,Large intestine,Rectum,Stomach,Small intestine)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 505 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 233 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Adrenal gland)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (222-233) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Tumor induction,Papilloma, wart, Response Site: Gastrointestinal tract,Large intestine,Rectum,Stomach,Small intestine)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 233 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Not reported)	NOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 253 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Lifespan, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 506 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1 % diet)	Development/ Growth	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 503 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1 % diet)	Development/ Growth	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (241-245) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Gastrointestinal tract)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 253 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (1 % diet)	Mortality	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 252 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Lifespan, Response Site: Not reported)	LOEL (1 % diet)	Mortality	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 485 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Histological changes, general,Lesions, Response Site: Skin, epidermis)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 233 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Pancreas,Skin, epidermis,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 254 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Lymphoma,Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Lung(s),Pancreas,Skin, epidermis,Trachea,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 461 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Histological changes, general,Lesions, Response Site: Skin, epidermis)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (235-248) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Gastrointestinal tract)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 505 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1 % diet)	Development/ Growth	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 228 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Pancreas)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 233 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Not reported)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 245 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Not reported)	NOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 251 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (1 % diet)	Mortality	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 244 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Adrenal gland)	NOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 244 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Lymphoma,Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Lung(s),Pancreas,Skin, epidermis,Trachea,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 503 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Lifespan, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 244 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Adrenal gland)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 228 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Lymphoma,Tumor induction, Response Site: Adrenal gland,Blood,Gastrointestinal tract,Kidney,Liver,Lung(s),Pancreas,Skin, epidermis,Trachea,Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 245 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Not reported)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 506 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (1 % diet)	Mortality	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Both male and female), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, NA (235-248) Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma,Injury, general,Tumor induction,Papilloma, wart, Response Site: Gastrointestinal tract,Large intestine,Rectum,Stomach,Small intestine)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12172-73-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 254 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Adenoma, Response Site: Pancreas)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation, Female (Measured in: Male organisms), Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 245 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Not reported)	LOEL (1 % diet)	Cancer/ Carcinogenesis	High	709665

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	NA Lifetime;no associated numeric value, (NA Lifetime;no associated numeric value)	*Cricetulus sp.* (Hamster), Gestation (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER LAKEVIEW LABORATORIES, NEW FIELD, NJ)	No substrate, Oral (diet, drink, gavage), Food, 489 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Histological changes, general,Lesions, Response Site: Skin, epidermis)	NR (1 % diet)	Cancer/ Carcinogenesis	High	709665
12172-73-5	1-12 Day(s), (12 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,Histological changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org)	Gastrointestinal	Uninformative	3615254
12001-29-5	1-12 Day(s), (12 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,Histological changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org)	Gastrointestinal	Uninformative	3615254
12001-29-5	1-12 Day(s), (12 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,Histological changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org)	Gastrointestinal	Uninformative	3615254
12172-73-5	1-12 Day(s), (12 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,Histological changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org)	Gastrointestinal	Uninformative	3615254

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	1-14 Day(s), (14 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org) Histological	Gastrointestinal	Uninformative	3615254
12001-28-4	1-14 Day(s), (14 Day(s))	*Mesocricetus auratus* (Golden Hamster), 20-24 Week(s), Female, Laboratory (NR)	Fabric or similar material, Topical, Cheek pouch, Not Reported	Unmeasured	0.5-0.8 mg/org	Cellular (Histology-Congestion,Dilation,changes, general,Hyperplasia, Response Site: Vasculature,Vein)	NR (0.5-0.8 mg/org) Histological	Gastrointestinal	Uninformative	3615254
12172-73-5	180 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Female organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 30 Female organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (0.5 mg/L)	Development/ Growth	High	3581049

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	180 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Male organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 27 Male organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (50 mg/L)	Development/ Growth	High	3581049
12172-73-5	180 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Male organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 29 Male organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (5 mg/L)	Development/ Growth	High	3581049

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	180 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Female organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 28 Female organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (50 mg/L)	Development/ Growth	High	3581049
12172-73-5	340 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Female organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 15 Female organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (50 mg/L)	Development/ Growth	High	3581049

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	340 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Male organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, NA (15-25) Male organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (50 mg/L)	Development/ Growth	High	3581049
12172-73-5	340 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both (Measured in: Female organisms), Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, 15-23 Female organisms	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NR (0.5-50 mg/L)	Development/ Growth	High	3581049

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	658 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both, Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Cellular (Histology-Lesions, Response Site: Adrenal gland,Gastrointestinal tract,Heart,Kidney,Liver,Lung(s))	NR (0.5-50 mg/L)	Cancer/ Carcinogenesis	High	3581049
12172-73-5	1-658 Day(s), (658 Day(s))	*Mesocricetus auratus* (Golden Hamster), Weanling, 2 Month(s), Both, Laboratory (OBTAINED FROM CHARLES RIVER BREEDING LABORATORIES LAKEVIEW HAMSTER COLONY, NEWFIELD, N.J.)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Unmeasured	0 mg/L /0 mg/L /0.5 mg/L /5 mg/L /50 mg/L	Mortality (Mortality-Survival, Response Site: Not reported)	NR (0.5-50 mg/L)	Mortality	High	3581049
12001-29-5	2 Generation, (2 Generation)	*Mus musculus* (House Mouse), Young adult (Measured in: F1 generation), Female, Laboratory (HARLAN LABORATORIES)	No substrate, Oral (diet, drink, gavage), Gavage, NA F1 generation	Unmeasured	0 ug/0.2 ml diet /50 ug/0.2 ml diet	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEL (50 ug/0.2 ml diet)	Mortality	Low	758926

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	2 Generation, (2 Generation)	*Mus musculus* (House Mouse), Young adult (Measured in: F1 generation), Female, Laboratory (HARLAN LABORATORIES)	No substrate, Oral (diet, drink, gavage), Gavage, NA F1 generation	Unmeasured	0 ug/0.2 ml diet /50 ug/0.2 ml diet	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (50 ug/0.2 ml diet)	Development/ Growth	Medium	758926
12001-29-5	2 Generation, (2 Generation)	*Mus musculus* (House Mouse), Young adult (Measured in: F1 generation), Female, Laboratory (HARLAN LABORATORIES)	No substrate, Oral (diet, drink, gavage), Gavage, NA F1 generation	Unmeasured	0 ug/0.2 ml diet /50 ug/0.2 ml diet	Accumulation (Accumulation-Residue, Response Site: Liver,Lung(s))	NR (50 ug/0.2 ml diet)	ADME (biotransformation)	Medium	758926
12001-29-5	2 Generation, (2 Generation)	*Mus musculus* (House Mouse), Young adult (Measured in: F0 generation), Female, Laboratory (HARLAN LABORATORIES)	No substrate, Oral (diet, drink, gavage), Gavage, NA F0 generation	Unmeasured	0 ug/0.2 ml diet /50 ug/0.2 ml diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (50 ug/0.2 ml diet)	Reproductive/ Teratogenic	Uninformative	758926
12001-28-4	0-2 Year(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Cellular (Histology-Ascites,Swelling, Response Site: Abdomen)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	0-2 Year(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Cellular (Histology-Ascites,Swelling, Response Site: Abdomen)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	0-2 Year(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Cellular (Histology-Ascites,Swelling, Response Site: Abdomen)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	0-2 Year(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Cellular (Histology-Ascites,Swelling, Response Site: Abdomen)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	>=20 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	>=20 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	>=20 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	>=20 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	10 mg	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NR (10 mg)	Cancer/ Carcinogenesis	Uninformative	6867451
12001-28-4	15-<75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, 25- 30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15- 75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, 25 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15-<75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, >25-<30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15- 75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, 25 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15-<75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, 25- 30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	15-<75 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (UNIVERSITY OF VERMONT)	Not reported, Injection, Intraperitoneal, >25-<30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15- 100 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, 25- 30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-28-4	15- 100 Week(s), (2 Year(s))	*Mus musculus* (House Mouse), Young, Female, Laboratory (JACKSON LABORATORIES, BAR HARBOR, ME, USA)	Not reported, Injection, Intraperitoneal, 25- 30 Organism	Not reported	10 mg	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10 mg)	Mortality	Uninformative	6867451
12001-29-5	4 Hour(s), (4 Hour(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Developmental changes, general, Response Site: Not reported)	NR (100 ug/ml)	ADME (biotransformation)	Low	182
12001-29-5	4 Hour(s), (4 Hour(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Developmental changes, general, Response Site: Not reported)	NR (100 ug/ml)	ADME (biotransformation)	Low	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /100 ug/ml	Growth (Development-Developmental changes, general, Response Site: Not reported)	NR (1-100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Weight, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NOEL (10 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NOEL (15.44 mg/org)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	LOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NR (0.15-15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Weight, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NOEL (10 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (15.44 mg/org)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NR (0.15-15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	LOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /100 ug/ml	Growth (Development-Developmental changes, general, Response Site: Not reported)	NR (1-100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (15.44 mg/ org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Development-Abnormal, Response Site: Not reported)	NOEL (15.44 mg/ org)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NOEL (15.44 mg/ org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (15.44 mg/ org)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Weight, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Growth (Development-Weight, Response Site: Not reported)	NOEL (100 ug/ml)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (15.44 mg/org)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Development-Weight, Response Site: Not reported)	NOEL (15.44 mg/org)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Resorbed embryos, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Pregnant, Paris or Gravid, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEL (15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Development-Weight, Response Site: Not reported)	NOEL (15.44 mg/org)	Development/ Growth	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Population (Population-Sex ratio, Response Site: Not reported)	NOEL (15.44 mg/org)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), Blastula, 4 Day(s), Not Reported, Not reported (NR)	Culture, Environmental, Culture medium, Not Reported	Unmeasured	0 ug/ml /1 ug/ml /10 ug/ml /100 ug/ml	Reproduction (Reproduction-Number of implantations, Response Site: Not reported)	NR (1-100 ug/ml)	Reproductive/ Teratogenic	Medium	182
12001-29-5	18 Day(s), (18 Day(s))	*Mus musculus* (House Mouse), 8-10 Week(s), Female, Not reported (NR)	No substrate, Oral (diet, drink, gavage), Drinking water, Not Reported	Measured	0 mg/org /0.15 mg/org /1.57 mg/org /15.44 mg/org	Growth (Growth-Stunting, Response Site: Not reported)	NOEL (15.44 mg/org)	Development/ Growth	Medium	182
12001-29-5	1 Week(s), (1 Week(s))	*Rattus norvegicus* (Norway Rat), 3 Month(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg diet/d /0.5 mg diet/d /50 mg diet/d	Growth (Morphology-Abnormal,General morphological changes, Response Site: Caecum,Colon,Ilium,Mucous,Rectum,Stomach)	NR (0.5-50 mg diet/d)	Gastrointestinal	Low	112

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	1 Week(s), (1 Week(s))	*Rattus norvegicus* (Norway Rat), 3 Month(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg diet/d /0.5 mg diet/d /50 mg diet/d	Cellular (Cell(s)-Cell changes,Organelle changes,Structural changes, Response Site: Caecum,Colon,Ilium,Mitochondria,Mucous,Nuclei,Rectum,Stomach)	NR (0.5-50 mg diet/d)	Gastrointestinal	Low	112
12001-29-5	14 Month(s), (14 Month(s))	*Rattus norvegicus* (Norway Rat), 3 Month(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg diet/d /0.5 mg diet/d /50 mg diet/d	Growth (Morphology-Abnormal,General morphological changes, Response Site: Caecum,Colon,Ilium,Mucous,Rectum,Stomach)	NR (0.5-50 mg diet/d)	Gastrointestinal	Low	112
12001-29-5	14 Month(s), (14 Month(s))	*Rattus norvegicus* (Norway Rat), 3 Month(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg diet/d /0.5 mg diet/d /50 mg diet/d	Cellular (Cell(s)-Cell changes,Organelle changes,Structural changes, Response Site: Caecum,Colon,Ilium,Mitochondria,Mucous,Nuclei,Rectum,Stomach)	NR (0.5-50 mg diet/d)	Gastrointestinal	Low	112
12001-28-4	4 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Mortality	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	4 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Weight, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439
12001-28-4	4 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	4 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA Male organisms	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)			3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	4 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA Female organisms	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)			3613439
12001-28-4	4 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Weight, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439
12001-28-4	7 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Weight, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	7 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Weight, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439
12001-28-4	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 Female organisms	Measured	10200 (8900-13200) ppm diet	Physiology (Immunological-Antibody titres,Infected,Parasitic infection, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 Female organisms	Measured	10200 (8900-13200) ppm diet	Physiology (Physiology-Physiology, general,Pigmentation,Respiration, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	12 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 Male organisms	Measured	10200 (8900-13200) ppm diet	Physiology (Physiology-Physiology, general,Pigmentation,Respiration, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 female, 1st generation	Measured	10200 (8900-13200) ppm diet	Physiology (Immunological-Antibody titres,Infected,Parasitic infection, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 female, 1st generation	Measured	10200 (8900-13200) ppm diet	Physiology (Physiology-Physiology, general,Pigmentation,Respiration, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	12 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 Male organisms	Measured	10200 (8900-13200) ppm diet	Physiology (Immunological-Antibody titres,Infected,Parasitic infection, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	12 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 male, 1st generation	Measured	10200 (8900-13200) ppm diet	Physiology (Immunological-Antibody titres,Infected,Parasitic infection, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	12 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 5 male, 1st generation	Measured	10200 (8900-13200) ppm diet	Physiology (Physiology-Physiology, general,Pigmentation,Respiration, Response Site: Brain,Cecum,Heart,Liver,Large intestine,Lung(s),Rectum,Small intestine,Skin, epidermis,Spleen,Salivary gland,Tear duct,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	57 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Jejunum)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	75 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	90 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	108 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Colon,Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	112 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	116 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	116 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	87- 116 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Abnormal,Developmental changes, general, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439
12001-28-4	87- 116 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Development-Abnormal,Developmental changes, general, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	120 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Colon,Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	122 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	124 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	124 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	125 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Jejunum)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	136 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Colon,Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	137 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	138 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	138 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	140 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	11- 141 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439
12001-28-4	11- 141 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (10200 (8900-13200) ppm diet)	Development/ Growth	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	21- 141 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)			3613439
12001-28-4	21- 141 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)			3613439
12001-28-4	11- 141 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Mortality		3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	11- 141 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	144 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Pancreas)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Whole organism)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Thyroid)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Testes)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 249 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Bone marrow)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Colon,Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Adrenal gland,Bone marrow,Cerebrum,Cecum,Colon,Cerebellum,Duodenum,Ear,Epididymis,Heart,Ileum,Jaw,Jejunum,Kidney,Liver,Lymph node,Lung(s),Mesentery,Mammary tissue,Medulla oblongata,Muscle,Nervous tissue,Prostate gland,Pituitary gland,Pleura,Peritoneum,Pancreas,Pharynx,Rib,Scapula,Stomach,Skin, epidermis,Spleen,Salivary gland,Trachea,Testes,Tongue,Thyroid,Urinary bladder,Vertebra)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Atrophy,Congestion,Degeneration,Edema,Histological changes, general,Hemorrhage,Lesions,Necrosis,Swelling, Response Site: Adrenal gland,Aorta,Bone marrow,Brain,Caecum,Cerebrum,Colon,Diaphragm,Duodenum,Ear,Esophagus,Eye,Heart,Jaw,Jejunum,Kidney,Liver,La intestine,Lymph node,Lung(s),Mammary tissue,Nose,Prostate gland,Pituitary gland,Preputial gland,Pancreas,Rib,Retina,Scrotum,Stomach,Small intestine,Skin, epidermis,Skull,Spleen,Spine, backbone,Salivary gland,Trachea,Testes,Tongue,Thymus,Urinary bladder)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general,Hyperkeratosis,Necrosis,Swelling, Response Site: Caecum,Colon,Esophagus,Stomach,Small intestine,Tongue)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	146 Week(s), (146 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: male, 1st generation), Male, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 male, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	147 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract,Stomach)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	148 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (10200 (8900-13200) ppm diet)	Mortality	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Bone marrow)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Thyroid)	LOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Atrophy,Congestion,Degeneration,Edema,Histological changes, general,Hemorrhage,Lesions,Necrosis,Swelling, Response Site: Adrenal gland,Aorta,Bone marrow,Brain,Caecum,Cerebrum,Colon,Clitoris, clitoral gland,Diaphragm,Duodenum,Ear,Esophagus,Eye,Heart,Jaw,Jejunum,Kidney,Liver,Large intestine,Lymph node,Lung(s),Mammary tissue,Nose,Ovaries,Prostate gland,Pituitary gland,Pancreas,Rib,Retina,Scrotum,Stomach,Small intestine,Skin, epidermis,Skull,Spleen,Spine, backbone,Salivary gland,Trachea,Tongue,Thymus,Urinary bladder,Uterus,Vagina)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, NA female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general,Hyperkeratosis,Necrosis,Swelling, Response Site: Caecum,Colon,Esophagus,Stomach,Small intestine,Tongue)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Bone marrow)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract)	NOEL (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), 15-16 Week(s) (Measured in: female, 1st generation), Female, Laboratory (PURCHASED FROM CHARLES RIVER BREEDING LABORATORIES (WILMINGTON, MA))	Litter, Oral (diet, drink, gavage), Diet, unspecified, 250 female, 1st generation	Measured	0 ppm diet /10200 (8900-13200) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Adrenal gland,Bone marrow,Cerebrum,Cecum,Colon,Cerebellum,Duodenum,Ear,Epididymis,Heart,Ileum,Jaw,Jejunum,Kidney,Liver,Lymph node,Lung(s),Mesentery,Mammary tissue,Medulla oblongata,Muscle,Nervous tissue,Prostate gland,Pituitary gland,Pleura,Peritoneum,Pancreas,Pharynx,Rib,Scapula,Stomach,Skin, epidermis,Spleen,Salivary gland,Trachea,Testes,Tongue,Thyroid,Urinary bladder,Vertebra)	NR (10200 (8900-13200) ppm diet)	Cancer/ Carcinogenesis	High	3613439
12001-29-5	>6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Growth rate, Response Site: Not reported)	NR (1 % diet)			3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Liver)	NOEL (1 % diet)	ADME (biotransformation)	Medium	3101157

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIOBREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Lung(s))	LOEL (1 % diet)	ADME (biotransformation)	Medium	3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIOBREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Blood)	NOEL (1 % diet)	ADME (biotransformation)	Medium	3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIOBREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Kidney)	LOEL (1 % diet)	ADME (biotransformation)	Medium	3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIOBREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Growth rate, Response Site: Not reported)	LOEL (1 % diet)			3101157

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Week(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Growth (Growth-Growth rate, Response Site: Not reported)	NOEL (1 % diet)			3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Omentum)	LOEL (1 % diet)	ADME (biotransformation)	Medium	3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /0 % diet /1 % diet	Accumulation (Accumulation-Residue, Response Site: Brain)	LOEL (1 % diet)	ADME (biotransformation)	Medium	3101157
12001-29-5	>6 Week(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Growth (Growth-Growth rate, Response Site: Not reported)	NR (1 % diet)			3101157

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Week(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Growth (Growth-Growth rate, Response Site: Not reported)	LOEL (1 % diet)			3101157
12001-29-5	16 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1 % diet)			3101157
12001-29-5	18 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1 % diet)			3101157
12001-29-5	18 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	3101157

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	18 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (BIO-BREEDING LABORATORIES OF CANADA LTD. OTTAWA)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 % diet /1 % diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	3101157
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Food, NA Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet /5 % diet /10 % diet /15 % diet /20 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1-20 % diet)	Development/ Growth	Low	3616802
12001-29-5	6 Week(s), (6 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Food, NA Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet /5 % diet /10 % diet /15 % diet /20 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1-20 % diet)	Development/ Growth	Low	3616802
12001-29-5	4-8 Month(s), (8 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Not Reported, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Unmeasured	0 mg/org /5.9 mg/org /17.1 mg/org /29.4 mg/org	Physiology (Injury-Tumor induction,Ulcer, Response Site: Gastrointestinal tract,Stomach)	NR (5.9-29.4 mg/org)	Cancer/ Carcinogenesis	Uninformative	3616802

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	4-8 Month(s), (8 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Not Reported, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Injection, Intraperitoneal, Not Reported	Unmeasured	0 mg /5.9 mg /17.1 mg /29.4 mg	Physiology (Injury-Tumor induction, Response Site: Stomach)	NR (5.9-29.4 mg)	Cancer/ Carcinogenesis	Uninformative	3616802
12001-29-5	4-8 Month(s), (8 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Not Reported, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Unmeasured	0 mg/org /5.9 mg/org /17.1 mg/org /29.4 mg/org	Physiology (Injury-Tumor induction,Ulcer, Response Site: Gastrointestinal tract,Stomach)	NR (5.9-29.4 mg/ org)	Cancer/ Carcinogenesis	Uninformative	3616802
12001-29-5	4-8 Month(s), (8 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Not Reported, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Injection, Intraperitoneal, Not Reported	Unmeasured	0 mg /5.9 mg /17.1 mg /29.4 mg	Physiology (Injury-Tumor induction, Response Site: Stomach)	NR (5.9-29.4 mg)	Cancer/ Carcinogenesis	Uninformative	3616802
12001-29-5	500-950 Day(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both (Measured in: Male organisms), Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 7 Male organisms	Unmeasured	0 % diet /0 % diet /10 % diet	Biochemical (Biochemistry-Cyclic guanylic acid, Response Site: Colon,Rectum)	NR (10 % diet)	Mechanistic: Cell signaling/ function; Kidney/renal	Uninformative	3616802

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	500-950 Day(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both (Measured in: Male organisms), Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 36 Male organisms	Unmeasured	0 % diet /0 % diet /10 % diet	Biochemical (Biochemistry-Adenosine 3',5'-cyclic monophosphate, Response Site: Colon,Rectum)	LOEL (10 % diet)	Mechanistic: Cell signaling/ function; Kidney/renal	Uninformative	3616802
12001-29-5	500-950 Day(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both (Measured in: Male organisms), Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 36 Male organisms	Unmeasured	0 % diet /0 % diet /10 % diet	Biochemical (Biochemistry-Adenosine 3',5'-cyclic monophosphate, Response Site: Colon,Rectum)	LOEL (10 % diet)	Mechanistic: Cell signaling/ function; Kidney/renal	Uninformative	3616802
12001-29-5	500-950 Day(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both (Measured in: Male organisms), Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 7 Male organisms	Unmeasured	0 % diet /0 % diet /10 % diet	Biochemical (Biochemistry-Cyclic guanylic acid, Response Site: Colon,Rectum)	NR (10 % diet)	Mechanistic: Cell signaling/ function; Kidney/renal	Uninformative	3616802
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Cellular (Histology-Lesions, Response Site: Colon,Rectum)	NOEL (10 % diet)	Cancer/ Carcinogenesis	Medium	3616802

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Accumulation (Accumulation-Residue, Response Site: Colon)	NR (10 % diet)	ADME (biotransformation)	Low	3616802
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Physiology (Injury-Tumor induction, Response Site: Colon)	NOEL (10 % diet)	Cancer/ Carcinogenesis	Medium	3616802
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Cellular (Histology-Lesions, Response Site: Colon,Rectum)	NOEL (10 % diet)	Cancer/ Carcinogenesis	Medium	3616802
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Accumulation (Accumulation-Residue, Response Site: Colon)	NR (10 % diet)	ADME (biotransformation)	Low	3616802

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28-32 Month(s), (32 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, 4 Month(s), Both, Laboratory (CHARLES RIVER, BOSTON, MASSACHUSETTS)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 189 Both male and female	Unmeasured	0 % diet /0 % diet /10 % diet	Physiology (Injury-Tumor induction, Response Site: Colon)	NOEL (10 % diet)	Cancer/ Carcinogenesis	Medium	3616802
12172-73-5	1- 8 Week(s), (2 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Feces,Gut)	NR (250-300 mg/org/wk)			3615355
12001-28-4	1- 8 Week(s), (2 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Feces,Gut)	NR (250-300 mg/org/wk)			3615355
12001-29-5	1- 8 Week(s), (2 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Feces,Gut)	NR (250-300 mg/org/wk)			3615355
12001-29-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355
12001-29-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Cell(s)-Cell changes,Organelle changes, Response Site: Gastrointestinal tract,Lymph node,Small intestine)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355
12001-28-4	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Growth (Development-Abnormal,Deformation, Response Site: Not reported)	NR (250-300 mg/org/wk)			3615355
12001-28-4	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Cell(s)-Cell changes,Organelle changes, Response Site: Gastrointestinal tract,Lymph node,Small intestine)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355
12001-28-4	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355
12001-29-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Growth (Development-Abnormal,Deformation, Response Site: Not reported)	NR (250-300 mg/org/wk)			3615355
12172-73-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Growth (Development-Abnormal,Deformation, Response Site: Not reported)	NR (250-300 mg/org/wk)			3615355
12172-73-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Cell(s)-Cell changes,Organelle changes, Response Site: Gastrointestinal tract,Lymph node,Small intestine)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355
12172-73-5	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Cellular (Histology-Histological changes, general, Response Site: Gastrointestinal tract)	NR (250-300 mg/org/wk)	Gastrointestinal	Medium	3615355
12001-28-4	2-52 Week(s), (1 Year(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355
12172-73-5	13 Month(s), (13 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355
12001-28-4	13 Month(s), (13 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355
12001-29-5	13 Month(s), (13 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, Not Reported	Unmeasured	0 mg/org/wk /250-300 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Gut)	NR (250-300 mg/org/wk)			3615355

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	>12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Reproduction (Reproduction-Weight, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)			758961
12172-73-5	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)			758961
12172-73-5	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Reproduction (Reproduction-Viability, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)			758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	12 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Reproduction (Reproduction-Weight, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)			758961
12172-73-5	19 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	3-52 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male and female, 1st generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA male and female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Growth (Growth-Weight gain, Response Site: Whole organism)	NR (10300 (6700-13400) ppm diet)	Development/ Growth	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	7-137 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male and female, 1st generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA male and female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)	Mortality	High	758961
12172-73-5	7-137 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male and female, 1st generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA male and female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (10300 (6700-13400) ppm diet)	Development/ Growth	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Parathyroid gland)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pituitary gland)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Thyroid)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor, Response Site: Adrenal gland)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor, Response Site: Not reported)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Thyroid)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Not reported)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Liver)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Mammary tissue)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pancreas)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pituitary gland)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Adrenal gland)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pancreas)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pancreas)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Skin, epidermis)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Thyroid)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Zymbal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Skin, epidermis)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pituitary gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pancreas)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Mammary tissue)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Lung(s))	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Liver)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Large intestine)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Preputial gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pituitary gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Immunological-Leukemia, Response Site: Hematopoietic system)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Small intestine)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Testes)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Not reported)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Mammary tissue)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	112-145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male and female, 1st generation), Both, Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA male and female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10300 (6700-13400) ppm diet)	Mortality	High	758961
12172-73-5	145 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: male, 1st generation), Both (Measured in: male, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 male, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Small intestine)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Clitoris, clitoral gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Zymbal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Liver)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Thyroid)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Skin, epidermis,Salivary gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Skin, epidermis)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pituitary gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Pancreas)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Ovaries)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Mouth)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Polyp, Response Site: Uterus)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Uterus)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor, Response Site: Not reported)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Immunological-Leukemia, Response Site: Hematopoietic system)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Adrenal gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Mammary tissue)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pancreas)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Pituitary gland)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Mammary tissue)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Thyroid)	LOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Adenoma, Response Site: Thyroid)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Not reported)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961
12172-73-5	149 Week(s), (149 Week(s))	*Rattus norvegicus* (Norway Rat), Adult, 15-16 Week(s) (Measured in: female, 1st generation), Both (Measured in: female, 1st generation), Laboratory (CHARLES RIVER BREEDING LAB, WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 female, 1st generation	Measured	0 ppm diet /10300 (6700-13400) ppm diet	Physiology (Injury-Malignant tumor, Response Site: Brain)	NOEL (10300 (6700-13400) ppm diet)	Cancer/ Carcinogenesis	High	758961

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchopnomonia,Fibrosis,Histological changes, general,Hemorrhage,Infiltration,Ischemia, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Proliferation, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Congestion, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Proliferation, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Congestion, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchopnomonia,Fibrosis,Histological changes, general,Hemorrhage,Infiltration,Ischemia, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543
12001-29-5	9 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis,Bronchopnomonia,Congestion,Fibrosis,Histological changes, general,Hemorrhage,Infiltration,Ischemia,Proliferation, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543
12001-29-5	9 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis,Bronchopnomonia,Congestion,Fibrosis,Histological changes, general,Hemorrhage,Infiltration,Ischemia,Proliferation, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	9 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543
12001-29-5	9 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis,Bronchopnomonia,Congestion,Histological changes, general,Hemorrhage,Infiltration,Ischemia, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Fibrosis, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	6-12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Bronchiolitis,Bronchopnomonia,Congestion,Histological changes, general,Hemorrhage,Infiltration,Ischemia, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543
12001-29-5	6-12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Histological changes, general, Response Site: Not reported)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Proliferation, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	6-12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Physiology (Immunological-Abscess, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543
12001-29-5	6-12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Physiology (Immunological-Abscess, Response Site: Lung(s),Pleura)	NR (1.5-3 g/L diet)	Respiratory	Medium	478543
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Accumulation (Accumulation-Residue, Response Site: Lung(s),Pleura,Spleen)	NR (1.5-3 g/L diet)	ADME (biotransformation)	Medium	478543

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Fibrosis, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	12 Month(s), (12 Month(s))	*Rattus norvegicus* (Norway Rat), 10-12 Week(s), Not Reported, Laboratory (ANIMAL LABORATORY OF ANKARA EDUCATIONAL AND RESEARCH HOSPITAL)	No substrate, Oral (diet, drink, gavage), Drinking water, 6 Organism	Unmeasured	0 g/L diet /1.5 g/L diet /3 g/L diet	Cellular (Histology-Proliferation, Response Site: Lung(s),Pleura)	LOEL (1.5 g/L diet)	Respiratory	Medium	478543
12001-29-5	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.8 mg diet/d)	Development/ Growth	Uninformative	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.8 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.6 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	12 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.6 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.8 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.8 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.6 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (8.6 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	24 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (10.4 mg diet/d)	Development/ Growth	Uninformative	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (8.6-359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10.4-379.0 mg diet/d)	Mortality	Uninformative	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (8.6-359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (10.4-379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (8.6-359.2 mg diet/d)	Mortality	Uninformative	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (8.6-359.2 mg diet/d)	Development/ Growth	Uninformative	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (10.4-397.0 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10.4-397.0 mg diet/d)	Mortality	Uninformative	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (8.8-358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (8.6-359.2 mg diet/d)	Development/ Growth	Uninformative	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (8.6-359.2 mg diet/d)	Mortality	Uninformative	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (10.4-379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (10.4-379.9 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10.4-397.0 mg diet/d)	Mortality	Uninformative	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (379.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (8.8-358.1 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (8.8-358.1 mg diet/d)	Mortality	Uninformative	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (10.4-397.0 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (10.4-397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (10.4-397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.6 mg diet/d /56.7 mg diet/d /359.2 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (359.2 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (10.4-379.9 mg diet/d)	Development/ Growth	Uninformative	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.4 mg diet/d /397.0 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (397.0 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
1332-21-4	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Male, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Male organisms	Measured	0 mg diet/d /0 mg diet/d /10.4 mg diet/d /65.5 mg diet/d /379.0 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (10.4-379.0 mg diet/d)	Mortality	Uninformative	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (8.8-358.1 mg diet/d)	Development/ Growth	Uninformative	759022

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Alimentary tract)	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Peritoneum)	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Lung(s))	NOEL (358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-29-5	12-30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Mortality (Mortality-Survival, Response Site: Not reported)	NR (8.8-358.1 mg diet/d)	Mortality	Uninformative	759022
12001-29-5	30 Month(s), (30 Month(s))	*Rattus norvegicus* (Norway Rat), 4-5 Week(s), Female, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, NA Female organisms	Measured	0 mg diet/d /0 mg diet/d /8.8 mg diet/d /59.8 mg diet/d /358.1 mg diet/d	Physiology (Injury-Tumor induction, Response Site: Not reported)	NR (8.8-358.1 mg diet/d)	Cancer/ Carcinogenesis	Medium	759022
12001-28-4	10-17 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 9 Organism	Not reported	50 mg/ml	Physiology (Injury-Malignant tumor, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-29-5	10-17 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 3 Organism	Not reported	50 mg/ml	Physiology (Injury-Malignant tumor, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	10-17 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 9 Organism	Not reported	50 mg/ml	Physiology (Injury-Malignant tumor, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-29-5	10-17 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 3 Organism	Not reported	50 mg/ml	Physiology (Injury-Malignant tumor, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-28-4	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	50 mg/ml	Cellular (Histology-Ascites, Response Site: Abdomen)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-29-5	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	50 mg/ml	Cellular (Histology-Ascites, Response Site: Abdomen)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-28-4	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 1 Organism	Not reported	50 mg/ml	Physiology (Injury-Benign tumor, Response Site: Uterus)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-28-4	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	50 mg/ml	Cellular (Histology-Ascites, Response Site: Abdomen)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-29-5	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, Not Reported	Not reported	50 mg/ml	Cellular (Histology-Ascites, Response Site: Abdomen)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-29-5	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 5 Organism	Not reported	50 mg/ml	Physiology (Immunological-Abscess, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 5 Organism	Not reported	50 mg/ml	Physiology (Immunological-Abscess, Response Site: Peritoneum)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-28-4	<=18 Month(s), (18 Month(s))	*Rattus norvegicus* (Norway Rat), Not reported, Female, Laboratory (NR)	Not reported, Injection, Intraperitoneal, 1 Organism	Not reported	50 mg/ml	Physiology (Injury-Benign tumor, Response Site: Uterus)	NR (50 mg/ml)	Cancer/ Carcinogenesis	Uninformative	3619879
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/ wk)	Mortality	Uninformative	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (250 mg/org/ wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	LOEL (250 mg/org/ wk)	Cancer/ Carcinogenesis	Medium	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/ wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/ wk)	Mortality	Uninformative	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/ wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/ wk)	Mortality	Uninformative	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Histology-Lesions, Response Site: Not reported)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/wk)	Mortality	Uninformative	3584909
12172-73-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/wk)	Mortality	Uninformative	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Histology-Lesions, Response Site: Not reported)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Mortality (Mortality-Time to death, Response Site: Not reported)	NOEL (250 mg/org/wk)	Mortality	Uninformative	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-29-5	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	LOEL (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12001-28-4	>630 Day(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (250 mg/org/wk)	Cancer/ Carcinogenesis	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-Mitotic index (# mitoses/ total cells), Response Site: Colon,Small intestine)	NR (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Colon)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Spleen)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Liver)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-Mitotic index (# mitoses/ total cells), Response Site: Colon,Small intestine)	NR (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Small intestine)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Stomach)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Cell(s)-Length,Size, Response Site: Colon,Small intestine)	NR (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Stomach)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Spleen)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Small intestine)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Cecum)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Colon)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Colon)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Liver)	LOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Cecum)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Genetics-DNA synthesis rate, Response Site: Colon)	NOEL (250 mg/org/wk)	Mechanistic	Medium	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12001-28-4	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 8 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Accumulation (Accumulation-Residue, Response Site: Multiple sites)	NR (250 mg/org/wk)	ADME (biotransformation)	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 24 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Behavior (Feeding behavior-Fecal production, Response Site: Not reported)	NR (250 mg/org/wk)	Behavioral	Uninformative	3584909
12172-73-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 3 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Cellular (Cell(s)-Length,Size, Response Site: Colon,Small intestine)	NR (250 mg/org/wk)	Mechanistic	Medium	3584909
12001-29-5	25 Month(s), (25 Month(s))	*Rattus norvegicus* (Norway Rat), 10 Week(s), Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, 22 Organism	Unmeasured	0 mg/org/wk /0 mg/org/wk /250 mg/org/wk	Growth (Growth-Weight, Response Site: Whole organism)	NR (250 mg/org/wk)	Development/ Growth	Uninformative	3584909

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	24 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both, Laboratory (CHARLES RIVER BREEDING LABS, WILMINGTON, MA. SIMONSEN LABS, GILROY, CA.)	No substrate, Oral (diet, drink, gavage), Food, 260 Both male and female	Unmeasured	0 % diet /10 % diet	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (10 % diet)	Other (please specify below)	Uninformative	3612470
12001-29-5	24 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both, Laboratory (CHARLES RIVER BREEDING LABS, WILMINGTON, MA. SIMONSEN LABS, GILROY, CA.)	No substrate, Oral (diet, drink, gavage), Food, 260 Both male and female	Unmeasured	0 % diet /10 % diet	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (10 % diet)	Other (please specify below)	Uninformative	3612470
12001-29-5	24 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both, Laboratory (CHARLES RIVER BREEDING LABS, WILMINGTON, MA. SIMONSEN LABS, GILROY, CA.)	No substrate, Oral (diet, drink, gavage), Food, 260 Both male and female	Unmeasured	0 % diet /10 % diet	Behavior (Behavior-Choke, Response Site: Not reported)	NR (10 % diet)	Other (please specify below)	Uninformative	3612470
12001-29-5	24 Month(s), (24 Month(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both, Laboratory (CHARLES RIVER BREEDING LABS, WILMINGTON, MA. SIMONSEN LABS, GILROY, CA.)	No substrate, Oral (diet, drink, gavage), Food, 260 Both male and female	Unmeasured	0 % diet /10 % diet	Behavior (Behavior-Choke, Response Site: Not reported)	NR (10 % diet)	Other (please specify below)	Uninformative	3612470

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	750 Day(s), (750 Day(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg/org/d /300 mg/org/d	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (300 mg/org/d)			3098168
12172-73-5	750 Day(s), (750 Day(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg/org/d /300 mg/org/d	Physiology (Injury-Malignant tumor, Response Site: Not reported)	NOEL (300 mg/org/d)			3098168
12172-73-5	750 Day(s), (750 Day(s))	*Rattus norvegicus* (Norway Rat), Weanling, Not Reported, Laboratory (NR)	No substrate, Oral (diet, drink, gavage), Food, Not Reported	Unmeasured	0 mg/org/d /300 mg/org/d	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (300 mg/org/d)			3098168
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (73-250) Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (554 (339-1053) mg/kg bdwt/d)	Mortality	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (73-250) Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (73-250) Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 73-250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (554 (339-1053) mg/kg bdwt/d)	Behavioral	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Parathyroid gland)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

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12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Ear)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Parathyroid gland)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 73-250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (554 (339-1053) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Ear)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 73-250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (554 (339-1053) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (554 (339-1053) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 73-250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (554 (339-1053) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	LOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (73-250) Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (554 (339-1053) mg/kg bdwt/d)	Mortality	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	122 Week(s), (122 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /554 (339-1053) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (554 (339-1053) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Large intestine)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/ d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (587 (382-1103) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (16-100) Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 16-100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (564 (355-1100) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 35-250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (587 (382-1103) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (35-250) Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (35-250) Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (587 (382-1103) mg/kg bdwt/d)	Mortality	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 16-100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (564 (355-1100) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Large intestine)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA F1 generation	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 35-250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (587 (382-1103) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 16-100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (564 (355-1100) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Large intestine)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 16-100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (564 (355-1100) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (16-100) Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA F1 generation	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA F0 generation	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (16-100) Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (564 (355-1100) mg/kg bdwt/d)	Mortality	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, NA (16-100) Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Mortality	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/ d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (564 (355-1100) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Food, 250 Male organisms	Measured	0 mg/kg bdwt/ d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (587 (382-1103) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Food, 250 Male organisms	Measured	0 mg/kg bdwt/ d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Whole organism)	NOEL (587 (382-1103) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 35-250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (587 (382-1103) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 35-250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (587 (382-1103) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (35-250) Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (35-250) Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (587 (382-1103) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	LOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA F0 generation	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (564 (355-1100) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Large intestine)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Preputial gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Male organisms	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (587 (382-1103) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /587 (382-1103) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (587 (382-1103) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Testes)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	128 Week(s), (128 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Male, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Male organisms	Measured	0 mg/kg bdwt/d /564 (355-1100) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Vagina)	NOEL (564 (355-1100) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 33-250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (33-250) Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (33-250) Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (613 (405-941) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 33-250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Reproductive/ Teratogenic	Uninformative	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (33-250) Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (613 (405-941) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (33-250) Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (613 (405-941) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 33-250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (613 (405-941) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (613 (405-941) mg/kg bdwt/d)	Reproductive/ Teratogenic	Uninformative	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (613 (405-941) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-130 Week(s), (130 Week(s))	*Rattus norvegicus* (Norway Rat), 9-10 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 33-250 Female organisms	Measured	0 mg/kg bdwt/d /613 (405-941) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (613 (405-941) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	LOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 41-250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (633 (410-990) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (41-250) Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (633 (410-990) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 15-100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (623 (397-1071) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, 15-100 Female organisms	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (623 (397-1071) mg/kg bdwt/ d)	Behavioral	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, NA F0 generation	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (623 (397-1071) mg/kg bdwt/ d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, NA F1 generation	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (623 (397-1071) mg/kg bdwt/ d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (15-100) Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (623 (397-1071) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (15-100) Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (623 (397-1071) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	LOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
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12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/ d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/ d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/ d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/ d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (633 (410-990) mg/kg bdwt/ d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (41-250) Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (633 (410-990) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (41-250) Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 4 F1 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 8 F0 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Parasitic infection, Response Site: Brain,Heart,Kidney,Liver,Large intestine,Lung(s),Small intestine,Skin, epidermis,Spleen,Salivary gland,Trachea,Urinary bladder)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, 15-100 Female organisms	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (623 (397-1071) mg/kg bdwt/ d)	Behavioral	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, NA F0 generation	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (623 (397-1071) mg/kg bdwt/ d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gav-age), Multiple routes within the oral exposure type group, NA F1 generation	Measured	0 mg/kg bdwt/ d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (623 (397-1071) mg/kg bdwt/ d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (15-100) Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (623 (397-1071) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, NA (15-100) Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Mortality (Mortality-Survival, Response Site: Not reported)	NOEL (623 (397-1071) mg/kg bdwt/d)	Mortality	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Immunological-Leukemia, Response Site: Blood)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Liver)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pancreas)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 41-250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (633 (410-990) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	LOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA (41-250) Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Injury, general, Response Site: Not reported)	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F1 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F1 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s) (Measured in: F0 generation), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, NA F0 generation	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Immunological-Infected, Response Site: Lung(s))	NR (633 (410-990) mg/kg bdwt/d)	Immune/ Hematological	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 41-250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (633 (410-990) mg/kg bdwt/d)	Behavioral	Uninformative	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Thyroid)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Skin, epidermis)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (633 (410-990) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Adrenal gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Uterus)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Clitoris, clitoral gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 15-100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NR (623 (397-1071) mg/kg bdwt/d)	Development/ Growth	Uninformative	758884
12001-29-5	0-131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Food, 41-250 Female organisms	Measured	0 mg/kg bdwt/d /633 (410-990) mg/kg bdwt/d	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (633 (410-990) mg/kg bdwt/d)	Behavioral	Uninformative	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Mammary tissue)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	NOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	131 Week(s), (131 Week(s))	*Rattus norvegicus* (Norway Rat), 8-9 Week(s), Female, Laboratory (CHARLES RIVER BREEDING LABORATORIES WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Multiple routes within the oral exposure type group, 100 Female organisms	Measured	0 mg/kg bdwt/d /623 (397-1071) mg/kg bdwt/d	Physiology (Injury-Tumor induction, Response Site: Pituitary gland)	LOEL (623 (397-1071) mg/kg bdwt/d)	Cancer/ Carcinogenesis	High	758884
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1 % diet)	Development/ Growth	Uninformative	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Growth (Growth-Weight, Response Site: Whole organism)	NR (1 % diet)	Development/ Growth	Uninformative	709664

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Behavior (Feeding behavior-Food consumption, Response Site: Not reported)	NR (1 % diet)	Behavioral	Uninformative	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 493 Both male and female	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Lesions, Response Site: Thyroid)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 499 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Lesions, Response Site: Caecum,Colon,Esophagus,Rectum,Stomach,Tongue)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	709664

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both (Measured in: Male organisms), Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 246 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Cellular (Histology-Lesions, Response Site: Thyroid)	LOEL (1 % diet)	Cancer/ Carcinogenesis	Medium	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F0 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1 % diet)	Reproductive/ Teratogenic	Uninformative	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both (Measured in: Male organisms), Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 249 Male organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Immunological-Leukemia, Response Site: Nuclei)	LOEL (1 % diet)	Cancer/ Carcinogenesis	Medium	709664

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling, Both (Measured in: Female organisms), Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 250 Female organisms	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Immunological-Leukemia, Response Site: Nuclei)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, 499 F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Physiology (Injury-Tumor induction, Response Site: Colon,Gastrointestinal tract,Large intestine,Stomach,Small intestine)	NR (1 % diet)	Cancer/ Carcinogenesis	Medium	709664
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F1 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F1 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Mortality (Mortality-Survival, Response Site: Not reported)	NR (1 % diet)	Mortality	Medium	709664

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Terrestrial: Mammalian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12172-73-5	106-146 Week(s), (>146 Week(s))	*Rattus norvegicus* (Norway Rat), Weanling (Measured in: F0 generation), Both, Laboratory (CHARLES RIVER BREEDING LABORATORIES, INC., WILMINGTON, MA)	No substrate, Oral (diet, drink, gavage), Diet, unspecified, NA F0 generation	Unmeasured	0 % diet /0 % diet /1 % diet	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NR (1 % diet)	Reproductive/ Teratogenic	Uninformative	709664

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium to magnesium ratio, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Magnesium (Mg) content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Nickel content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Chromium content, Response Site: Not reported)	NR (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (NR)	Mortality	Low	3583167

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Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Magnesium (Mg) content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Nickel content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium to magnesium ratio, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Chromium content, Response Site: Not reported)	NR (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	21 Day(s), (21 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (NR)	Mortality	Low	3583167

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Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium to magnesium ratio, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Nickel content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (NR)	Mortality	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (NR)	Mortality	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Chromium content, Response Site: Not reported)	NR (NR)	ADME (biotransformation)	Low	3583167

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Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Magnesium (Mg) content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Chromium content, Response Site: Not reported)	NR (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Nickel content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Magnesium (Mg) content, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	30 Day(s), (30 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium to magnesium ratio, Response Site: Not reported)	LOEL (NR)	ADME (biotransformation)	Low	3583167

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Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	297 Day(s), (297 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (NR)	Mortality	Low	3583167
1332-21-4	297 Day(s), (297 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium content,Chromium content,Magnesium (Mg) content,Nickel content, Response Site: Feces)	NR (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	297 Day(s), (297 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (NR)	Mortality	Low	3583167
1332-21-4	297 Day(s), (297 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Biochemical (Biochemistry-Calcium content,Chromium content,Magnesium (Mg) content,Nickel content, Response Site: Feces)	NR (NR)	ADME (biotransformation)	Low	3583167
1332-21-4	297 Day(s), (297 Day(s))	*Lumbricus rubellus* (Earthworm), Adult, Not Reported, Wild (COLLECTED IN A CLOVER FIELD NEAR VANCOUVER)	Natural soil, Environmental, Present in soil, Not Reported	Not reported	NR /NR	Reproduction	NR (NR)	Reproductive/ Teratogenic	Low	3583167

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Terrestrial: Worms Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Terrestrial: Avian Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
1332-21-4	1 Year(s), (1 Year(s))	*Gallus gallus* (Chicken), 2-6 Year(s), Not Reported, Laboratory (NR)	Not reported, Injection, Air sac injection, 1 Organism	Not reported	0.5 ml	Mortality (Mortality-Death with tumors, Response Site: Not reported)	NR (0.5 ml)			3664651
12172-73-5	4 Year(s), (48 Month(s))	*Gallus gallus* (Chicken), Pullet, 3 Month(s), Female, Laboratory (NR)	Not reported, Injection, Air sac injection, 1 Organism	Not reported	1 ml	Physiology (Injury-Benign tumor, Response Site: Not reported)	NR (1 ml)	Cancer/ Carcinogenesis	Low	3664651
12172-73-5	4 Year(s), (48 Month(s))	*Gallus gallus* (Chicken), Pullet, 3 Month(s), Female, Laboratory (NR)	Not reported, Injection, Air sac injection, Not Reported	Not reported	1 ml	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1 ml)			3664651
12001-28-4	40-44 Month(s), (48 Month(s))	*Gallus gallus* (Chicken), Pullet, 3 Month(s), Female, Laboratory (NR)	Not reported, Injection, Air sac injection, 2 Organism	Not reported	1 ml	Physiology (Injury-Benign tumor,Malignant tumor, Response Site: Not reported)	NR (1 ml)	Cancer/ Carcinogenesis	Low	3664651
12001-28-4	48 Month(s), (48 Month(s))	*Gallus gallus* (Chicken), Pullet, 3 Month(s), Female, Laboratory (NR)	Not reported, Injection, Air sac injection, Not Reported	Not reported	1 ml	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1 ml)			3664651

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Growth (Growth-Length, Response Site: Root)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Abundance, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Protein content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Starch content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Sugar content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Chlorophyll, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	3 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Protein content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Growth (Growth-Length, Response Site: Root)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Starch content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Abundance, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Chlorophyll, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Sugar content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	NOEC (0.5 ug/org)			3080106
12001-29-5	7 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	LOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	NOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Sugar content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Growth (Growth-Length, Response Site: Root)	NOEC (5.0 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Protein content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Abundance, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Chlorophyll, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Starch content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	14 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Sugar content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Protein content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Growth (Growth-Length, Response Site: Root)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Abundance, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Starch content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Chlorophyll, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	LOEC (0.5 ug/org)			3080106
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	LOEC (5.0 ug/org)			3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	21 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	NOEC (0.5 ug/org)			3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Chlorophyll, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Biomass, Response Site: Not reported)	LOEC (0.5 ug/org)	Development/ Growth		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Sugar content, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Protein content, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Hydrogen peroxide, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Growth (Growth-Length, Response Site: Root)	LOEC (0.5 ug/org)	Development/ Growth		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	NOEC (0.5 ug/org)	Mechanistic		3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	LOEC (5.0 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Population (Population-Abundance, Response Site: Not reported)	LOEC (0.5 ug/org)	Development/ Growth		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	LOEC (5.0 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Superoxide dismutase (SOD) enzyme activity, Response Site: Not reported)	NOEC (0.5 ug/org)	Mechanistic		3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Physiology (Physiology-Lipid peroxidation, Response Site: Not reported)	LOEC (5.0 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Starch content, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Carotenoid content, Response Site: Not reported)	LOEC (0.5 ug/org)	Mechanistic		3080106
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Enzyme(s)-Catalase, Response Site: Not reported)	NOEC (0.5 ug/org)	Mechanistic		3080106

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Aquatic: Vascular plants Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	28 Day(s), (28 Day(s))	*Lemna gibba* (Inflated Duckweed), 3 Generation, Not Reported, Laboratory (COLLECTED FROM NATURAL HABITAT, MAINTAINED IN LAB)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ug/org /0.5 ug/org /5.0 ug/org	Biochemical (Biochemistry-Electrolytes, Response Site: Root)	LOEC (0.5 ug/org)	Mechanistic		3080106

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Fibrosis,Hyperplasia,Hypertrophy, Response Site: Gill(s))	NR (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Ultrastructural changes, Response Site: Gill(s))	LOEC (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Fibrosis,Hyperplasia,Hypertrophy, Response Site: Gill(s))	NR (100000000 fibers/L)	Respiratory	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Ultrastructural changes, Response Site: Gill(s))	LOEC (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (100-100000000 fibers/L)	ADME (biotransformation)	Low	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NR (100-100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	LOEC (10000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	LOEC (100000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NR (100-100000000 fibers/L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (100-100000000 fibers/L)	Mortality	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	NOEC (100 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	LOEC (10000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (100 fibers/L)	Behavioral	High	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	NOEC (10000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	LOEC (100000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (100 fibers/L)	Behavioral	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (100-100000000 fibers/L)	Mortality	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (10000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100 fibers/ L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NR (100-100000000 fibers/ L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (100-100000000 fibers/L)	Mortality	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (100-100000000 fibers/L)	ADME (biotransformation)	Low	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100 fibers/L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	LOEC (10000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NR (100-100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (100-100000000 fibers/L)	ADME (biotransformation)	Low	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Ultrastructural changes, Response Site: Gill(s))	LOEC (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Fibrosis,Hyperplasia,Hypertrophy, Response Site: Gill(s))	NR (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Ultrastructural changes, Response Site: Gill(s))	LOEC (100000000 fibers/L)	Respiratory	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Cellular (Histology-Fibrosis,Hyperplasia,Hypertrophy, Response Site: Gill(s))	NR (100000000 fibers/L)	Respiratory	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	NOEC (100 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	LOEC (10000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (100 fibers/L)	Behavioral	High	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	NOEC (10000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	LOEC (100000 fibers/L)	Development/ Growth	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (100 fibers/L)	Behavioral	High	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (100-100000000 fibers/L)	Mortality	Medium	3093856

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CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (10000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	LOEC (100000 fibers/L)	Development/ Growth	Medium	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (100-100000000 fibers/L)	ADME (biotransformation)	Low	3093856
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula manilensis* (Asiatic Clam), Juvenile, Not Reported, Wild (COLLECTED FROM NEW RIVER, VA, NEAR INDUSTRIAL PUMP STATION)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L / 100 fibers/L / 10000 fibers/L /100000 fibers/L /1000000 fibers/L / 100000000 fibers/L	Growth (Morphology-Weight, Response Site: Tissue)	NOEC (100000000 fibers/L)	Development/ Growth	Medium	3093856

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	48 Hour(s), (96 Hour(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (>0 fibers/L)	Behavioral	High	3093600
12001-29-5	72 Hour(s), (96 Hour(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (>0 fibers/L)	Behavioral	High	3093600
12001-29-5	96 Hour(s), (96 Hour(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Whole organism)	NR (>0-75000000 fibers/L)	ADME (biotransformation)	High	3093600
12001-29-5	96 Hour(s), (96 Hour(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (>0-75000000 fibers/L)	ADME (biotransformation)	High	3093600
12001-29-5	96 Hour(s), (96 Hour(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	NOEC (75000000 fibers/L)	Behavioral	High	3093600

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	14 Day(s), (14 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (>0-75000000 fibers/L)	Mortality	High	3093600
12001-29-5	14 Day(s), (14 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Reproduction (Reproduction-Progeny counts/ numbers, Response Site: Not reported)	NR (>0-75000000 fibers/L)	Reproductive/ Teratogenic	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Biochemical (Biochemistry-Water content, Response Site: Tissue)	NR (>0-75000000 fibers/L)	Skin and Connective Tissue	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (75000000 fibers/L)	Development/ Growth	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Growth (Morphology-Length, Response Site: Shell)	LOEC (>0 fibers/L)	Development/ Growth	High	3093600

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Growth (Growth-Weight gain, Response Site: Whole organism)	NR (>0-75000000 fibers/L)	Development/ Growth	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Behavior (Behavior-Filtration rate, Response Site: Not reported)	LOEC (>0 fibers/L)	Behavioral	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Viscera)	NR (>0-75000000 fibers/L)	ADME (biotransformation)	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Adult, Not Reported, Wild (COLLECTED FROM NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Static, 10 Adult	Measured	0 fibers/L / >0 fibers/L />0 fibers/L /190000 fibers/L /8400000 fibers/L / 75000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (75000000 fibers/L)	Development/ Growth	High	3093600
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Not reported, Not Reported, Wild (NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Not reported, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Viscera)	BCF (100000000 fibers/L)	ADME (biotransformation)	Medium	3584230
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Not reported, Not Reported, Wild (NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Not reported, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s))	BCF (100000000 fibers/L)	ADME (biotransformation)	Medium	3584230

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Aquatic: Mollusks Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Corbicula sp.* (Clam), Not reported, Not Reported, Wild (NEW RIVER, VIRGINIA)	Fresh water, Aqueous (aquatic habitat), Not reported, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Whole organism)	BCF (100000000 fibers/L)	ADME (biotransformation)	Medium	3584230

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	52 Day(s), (67 Day(s))	*Lepomis cyanellus* (Green Sunfish), Not reported, Both, Laboratory (BOWLING GREEN, OHIO)	Fresh water, Aqueous (aquatic habitat), Static, 40 Organism	Unmeasured	0 fibers/L /1500000 fibers/L / 3000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1500000-3000000 fibers/L)	Mortality	Medium	3584231
12001-29-5	28 Day(s), (40 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 75 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 106 Egg	Unmeasured	0 fibers/L /3000000 fibers/L	Cellular (Histology-Hyperplasia,Hypertrophy,Lesions,Proliferation,Vacuolization; Response Site: Gill(s),Lateral line,Skin, epidermis)	NR (3000000 fibers/L)	Mechanistic: Cancer/ Carcinogenesis; Developmental and juvenile toxicology	Low	3584231
12001-29-5	28 Day(s), (40 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 75 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 106 Egg	Unmeasured	0 fibers/L /3000000 fibers/L	Behavior (Behavior-Swimming, Response Site: Not reported)	NR (3000000 fibers/L)	Behavioral	Medium	3584231

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	40 Day(s), (40 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 75 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 106 Egg	Unmeasured	0 fibers/L /3000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (3000000 fibers/L)	Mortality	Medium	3584231
12001-29-5	86 Day(s), (86 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 49 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 23 Egg	Unmeasured	0 fibers/L /1500000 fibers/L	Behavior (Behavior-Equilibrium, Response Site: Not reported)	LOEC (1500000 fibers/L)	Behavioral	Medium	3584231
12001-29-5	86 Day(s), (86 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 49 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 27 Egg	Unmeasured	0 fibers/L /1500000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (1500000 fibers/L)	Mortality	Medium	3584231

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	86 Day(s), (86 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 49 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 23 Egg	Unmeasured	0 fibers/L /1500000 fibers/L	Physiology (Intoxication-Ataxia, Response Site: Not reported)	LOEC (1500000 fibers/L)	Behavioral	Uninformative	3584231
12001-29-5	86 Day(s), (86 Day(s))	*Oncorhynchus kisutch* (Silver Salmon), Egg, 49 Day(s), Not Reported, Laboratory (MICHIGAN DEPARTMENT OF NATURAL RESOURCES PLATTE RIVER FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Renewal, 23 Egg	Unmeasured	0 fibers/L /1500000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (1500000 fibers/L)	Development/ Growth	Medium	3584231
12001-29-5	0 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)			3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	13-21 Day(s), (13-21 Day(s))	*Oryzias latipes* (Japanese Medaka), Egg, Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 10 Egg	Unmeasured	0 fibers/L / 100 fibers/L /10000 fibers/L /1000000 fibers/L / 100000000 fibers/L / 10000000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (10000000000 fibers/L)	Mortality		3585046
12001-29-5	13-21 Day(s), (13-21 Day(s))	*Oryzias latipes* (Japanese Medaka), Egg, Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Static, 10 Egg	Unmeasured	0 fibers/L / 100 fibers/L /10000 fibers/L /1000000 fibers/L / 100000000 fibers/L / 10000000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (10000000000 fibers/L)	Mortality		3585046
12001-29-5	13-21 Day(s), (13-21 Day(s))	*Oryzias latipes* (Japanese Medaka), Egg, Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Static, 10 Egg	Unmeasured	0 fibers/L / 100 fibers/L /10000 fibers/L /1000000 fibers/L / 100000000 fibers/L / 10000000000 fibers/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NR (100-10000000000 fibers/L)	Mortality		3585046
12001-29-5	13-21 Day(s), (13-21 Day(s))	*Oryzias latipes* (Japanese Medaka), Egg, Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 10 Egg	Unmeasured	0 fibers/L / 100 fibers/L /10000 fibers/L /1000000 fibers/L / 100000000 fibers/L / 10000000000 fibers/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NR (100-10000000000 fibers/L)	Mortality		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	1-28 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	28 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth		3585046
12001-29-5	1-28 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	1-28 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	1-28 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	LOEC (10000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	56 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth		3585046
12001-29-5	29-56 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	29-56 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	29-56 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	29-56 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	84 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth		3585046
12001-29-5	57-84 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	57-84 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	57-84 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	LOEC (5100000 fibers/L)			3585046
12001-29-5	91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Growth (Growth-Thickness, Response Site: Skin, epidermis)	NOEC (>0 fibers/ L)			3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (>0 fibers/ L)			3585046
12001-29-5	28-91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Whole organism)	NR (>0-76000000000 fibers/L)	ADME (biotransformation)		3585046
12001-29-5	91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (>0-76000000000 fibers/L)	Mortality		3585046
12001-29-5	91 Day(s), (91 Day(s))	*Oryzias latipes* (Japanese Medaka), Larva, <24 Hour(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Renewal, 15 Larvae	Measured	0 fibers/L />0 fibers/ L /5100000 fibers/L / 470000000 fibers/L / 76000000000 fibers/L	Growth (Growth-Thickness, Response Site: Skin, epidermis)	LOEC (5100000 fibers/L)			3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	85-112 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	112 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth		3585046
12001-29-5	85-112 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	85-112 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NOEC (100000000 fibers/L)	Mortality		3585046
12001-29-5	113-140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Hatch, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	113-140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	1-140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Mean spawns per female, Response Site: Not reported)	NR (10000-100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	113-140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth		3585046
12001-29-5	1-140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NR (10000-100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	140 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Mortality (Mortality-Survival, Response Site: Not reported)	NOEC (100000000 fibers/L)	Mortality		3585046
12001-29-5	168 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (10000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	1-168 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	1-168 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	1-168 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Non-viable, Response Site: Not reported)	NOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	168 Day(s), (168 Day(s))	*Oryzias latipes* (Japanese Medaka), Juvenile, 8 Week(s), Both, Laboratory (CAROLINA BIOLOGICAL SUPPLY COMPANY, BURLINGTON, NC)	Fresh water, Aqueous (aquatic habitat), Flow-through, 120 Juvenile	Unmeasured	0 fibers/L / 10000 fibers/L /100000000 fibers/L	Reproduction (Reproduction-Reproductive success (general), Response Site: Not reported)	LOEC (100000000 fibers/L)	Reproductive/ Teratogenic		3585046
12001-29-5	96 Hour(s), (96 Hour(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L /1000000 fibers/L / 1000000000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Kidney,Liver,Muscle)	NR (1000000-1000000000000 fibers/L)	ADME (biotransformation)	Medium	4350438
12001-29-5	96 Hour(s), (96 Hour(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 fibers/L /1000000 fibers/L / 1000000000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Kidney,Liver,Muscle)	NR (1000000-1000000000000 fibers/L)	ADME (biotransformation)	Medium	4350438

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/ L /1000000 fibers/L / 100000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (100000000 fibers/L)	Mortality	Uninformative	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/ L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	LOEC (1000000 fibers/L)	Development/ Growth	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/ L /1000000 fibers/L / 100000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Kidney,Liver,Muscle)	NR (10000-100000000 fibers/ L)	ADME (biotransformation)	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/ L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (10000 fibers/L)	Development/ Growth	High	4350438

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Juvenile, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 fibers/L / 10000 fibers/ L /1000000 fibers/L / 100000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (100000000 fibers/L)	Development/ Growth	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/ L /610000000 fibers/L	Accumulation (Accumulation-Residue, Response Site: Gill(s),Kidney,Liver,Muscle)	NR (0-610000000 fibers/L)	ADME (biotransformation)	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/ L /610000000 fibers/L	Behavior (Behavior-Swimming, Response Site: Not reported)	NOEC (610000000 fibers/L)	Behavioral	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/ L /610000000 fibers/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (610000000 fibers/L)	Mortality	Uninformative	4350438

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/L /610000000 fibers/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (610000000 fibers/L)	Development/ Growth	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/L /610000000 fibers/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (610000000 fibers/L)	Development/ Growth	High	4350438
12001-29-5	30 Day(s), (30 Day(s))	*Pimephales promelas* (Fathead Minnow), Adult, Not Reported, Laboratory (KURTZ FISH HATCHERY, ELVERSON, PENNSYLVANIA)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 fibers/L / 0 fibers/L / 720000 fibers/L /610000000 fibers/L	Behavior (Behavior-Swimming, Response Site: Not reported)	NOEC (610000000 fibers/L)	Behavioral	High	4350438
12001-29-5	6 Month(s), (6 Month(s))	*Poecilia formosa* (Amazon Molly), 2 Month(s) (Measured in: Fingerling), Female, Laboratory (NR)	Fresh water, Aqueous (aquatic habitat), Renewal, 10 Fingerling	Unmeasured	0 mg/L /0.1 mg/L /1.0 mg/L /10 mg/L	Cellular (Histology-Debris,Dilation,Hyperplasia,Hypertrophy,Lesions,Necrosis,Vacuolization, Response Site: Gill(s),Heart,Kidney)	NR (0.1-10 mg/L)	Skin and Connective Tissue	Low	3582159
12001-29-5	6 Month(s), (6 Month(s))	*Poecilia formosa* (Amazon Molly), 2 Month(s) (Measured in: Fingerling), Female, Laboratory (NR)	Fresh water, Aqueous (aquatic habitat), Renewal, 10 Fingerling	Unmeasured	0 mg/L /0.1 mg/L /1.0 mg/L /10 mg/L	Cellular (Histology-Debris,Dilation,Hyperplasia,Hypertrophy,Lesions,Necrosis,Vacuolization, Response Site: Gill(s),Heart,Kidney)	NR (0.1-10 mg/L)	Hepatic/Liver	Low	3582159

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Aquatic: Fish Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID

* If multiple extractions contained all identical information except the effect level, extraction rows were collapsed and the differing levels are listed by comma in this row.

Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Increased risk of IPF Study Design: Case-Control	Occupational; PESS included in study; Female, Male; Australian adults (cases and controls) with and without IPF, with 69% male and 31% female study participants in both groups.	Occupational The data included self-reported exposure to asbestos. The authors estimated exposures to asbestos using the "Australian asbestos JEM [Job Exposure Matrix]" combining occupation, industry and time variables.; Asbestos - Not specified: 1332-21-4	Table 1 (Self-assessed exposures) Unadjusted OR: 1.32 (adjusted OR: 1.37), 95% CI: 1.08 to 1.74, p value = 0.009Table 2 (occupational exposures) Unadjusted OR: 1.35 (adjusted OR: 1.31), 95% CI: 0.84 to 2.07, p value = 0.236Table 3 (Asbestos exposure assessed by AsbJEM, significant ORs only: Q3 unadjusted OR: 1.39 (adjusted OR 1.41), 95% CI: 1.03 to 1.93), p value = 0.034Table 3 (Asbestos exposure assessed by AsbJEM, significant ORs only: Q4 unadjusted OR: 1.55 (adjusted OR: 1.57), 95% CI: 1.15 to 2.15), p value <0.001	Medium	6869440
FVC, FEV1, FEV1/FVC ratio, and restrictive and obstructive lung function patterns measured by spirometry. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, % FEV1/FVC would decrease 1.1% on average (SE=0.54, p-value<0.05).For FVC, FEV1, and lung function patterns, there were no statistically significant associations were observed.	Medium	2078953
FVC, FEV1, FEV1/FVC ratio, and restrictive and obstructive lung function patterns measured by spirometry. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, % FEV1/FVC would decrease 1.1% on average (SE=0.54, p-value<0.05).For FVC, FEV1, and lung function patterns, there were no statistically significant associations were observed.	Medium	2078953

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FVC, FEV1, FEV1/FVC ratio, and restrictive and obstructive lung function patterns measured by spirometry. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, % FEV1/FVC would decrease 1.1% on average (SE=0.54, p-value<0.05).For FVC, FEV1, and lung function patterns, there were no statistically significant associations were observed.	Medium	2078953
FVC, FEV1, FEV1/FVC ratio, and restrictive and obstructive lung function patterns measured by spirometry. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, % FEV1/FVC would decrease 1.1% on average (SE=0.54, p-value<0.05).For FVC, FEV1, and lung function patterns, there were no statistically significant associations were observed.	Medium	2078953
FVC, FEV1, FEV1/FVC ratio, and restrictive and obstructive lung function patterns measured by spirometry. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, % FEV1/FVC would decrease 1.1% on average (SE=0.54, p-value<0.05).For FVC, FEV1, and lung function patterns, there were no statistically significant associations were observed.	Medium	2078953

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small irregular parenchymal opacities determined by standard posteroanterior chest X-rays. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, the odds of parenchymal opacities (>=1/0) were double (OR=2.0, 95% CI=1.3-3.1, p-value<0.01). For the same exposure, the odds of parenchymal opacities (>=1/1) were nearly identical (OR=2.0, 95% CI=1.1-3.5, p-value<0.05).	Medium	2078953
Small irregular parenchymal opacities determined by standard posteroanterior chest X-rays. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, not specified; Workers at 6 different asbestos cement plants: (2006), Turkey, 307 in unexposed group and 99 in possibly exposed group (sex not specified but adjusted for). Only 260 workers have asbestos exposure and lung function testing results.	PCM Air (area level), Occupational Fiber concentration mean (SD) were 0.27 (0.22) fiber/mL during the survey period (not stated). Chrysotile is noted as the only exposure to asbestos under consideration.; Asbestos - Chrysotile (serpentine): 12001-29-5	For a 1-natural log unit increase in asbestos exposure, the odds of parenchymal opacities (>=1/0) were double (OR=2.0, 95% CI=1.3-3.1, p-value<0.01). For the same exposure, the odds of parenchymal opacities (>=1/1) were nearly identical (OR=2.0, 95% CI=1.1-3.5, p-value<0.05).	Medium	2078953

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Fibrosis confirmed by scoring 0-4 based on a classification proposed by Hinson et al., 1974 HeroID:3099579. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Individuals from a cohort of former workers at an asbestos cement plant: (1990; original cohort published 1987), Sweden, 76 in the exposed group and 96 in the referent group.	TEM Biomonitoring Biomonitoring matrix: lung tissue; "The highest estimated time weighted average value was 10 fibres/ml (f/ml) for millers until 1952. During the 1970s the highest exposure concentration was 4 f/ml. The only workers continuously exposed to average concentrations above 2 f/ml were millers, mixers, and workers engaged in polishing and sawing operations." Majority chrysotile, some amphibole fibers such as tremolite, anthophyllite, amosite, and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9, Amosite (grunerite): 12172-73-5	Among exposed workers, the association between pronounced fibrosis and concentrations of crocidolite and amosite was statistically significant when compared to none or slight fibrosis (p=0.02).Presence of any fibrosis was more likely among workers exposed to tremolite (chi-square = 4.9, p = 0 003). Presence of any fibrosis was more likely among controls exposed to any amphibole fiber (chi-square = 5.0, p = 0.03). This was more pronounced among nonsmokers and those who smoked <20 packs-years (chi-square = 7.9, p = 0 005), and for tremolite (chi-square = 5.3, p = 0 02). Comments: Reported results treated fibrosis as a dichotomous variable (pronounced [grade 2-4] v. none or slight [grade 0 and 1]; any fibrosis [grade 1-4] v. none). All other analyses where degree of fibrosis was not dichotomized were not statistically significant.	Medium	3082921
Asbestosis determined by trained and experienced readers in accordance to UICC/ ILO classification.	Adults or general, Occupational; PESS included in study; Female, Male; Former asbestos mine workers and former residents of Wittenoom who participated in a vitamin A program starting in 1990: Wittenoom, Western Australia. About 3000 participated in the Vitamin A program (Alfonso et al., 2005 2079051), 1392 had at least one spirometric test completed, 573 were residents and 819 were former workers (Alfonso et al., 2004 733567).	Air (area level), Occupational Intensity of exposure for subjects that didn"t work directly asbestos was 1 fiber/ml from 1943 to 1957, 0.5 f/ml between 1958 and 1966, and 0.01 f/ml in 1992. Individual cumulative exposure was calculated using intensity of exposure and duration of residence in Wittenoom. Majority crocidolite (Alfonso et al., 2004 733567, Alfonso et al., 2005 2079051).; Asbestos - Crocidolite (riebeckite): 12001-28-4	There were no significant differences in cumulative asbestos exposure between subjects with asbestosis and subjects with no abnormality (Franklin & Robinson 2015 3077939).	Medium	733567

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques and diffuse pleural thickening determined by trained and experienced readers in accordance to UICC/ILO classification.	Adults or general, Occupational; PESS included in study; Female, Male; Former asbestos mine workers and former residents of Wittenoom who participated in a vitamin A program starting in 1990: Wittenoom, Western Australia. About 3000 participated in the Vitamin A program (Alfonso et al., 2005 2079051), 1392 had at least one spirometric test completed, 573 were residents and 819 were former workers (Alfonso et al., 2004 733567).	Air (area level), Occupational Intensity of exposure for subjects that didn"t work directly asbestos was 1 fiber/ml from 1943 to 1957, 0.5 f/ml between 1958 and 1966, and 0.01 f/ml in 1992. Individual cumulative exposure was calculated using intensity of exposure and duration of residence in Wittenoom. Majority crocidolite (Alfonso et al., 2004 733567, Alfonso et al., 2005 2079051).; Asbestos - Crocidolite (riebeckite): 12001-28-4	Compared to subjects with no radiographic abnormality, cumulative asbestos exposure was higher among subjects with pleural plaques (6.6 f/ml-year; 95% CI: 2.7-17.7), p-value NR) and diffuse pleural thickening (6.0 f/ml-year; 95% CI: 2.0-16.8), p-value NR) (Franklin & Robinson 2015 3077939).	Medium	733567
DLCO measured in accordance to American Thoracic Society guidelines using a Hewlett PackardGas Transfer Analyser or a Medical Graphics 1070 system (Alfonso et al., 2005 2079051).	Adults or general, Occupational; PESS included in study; Female, Male; Former asbestos mine workers and former residents of Wittenoom who participated in a vitamin A program starting in 1990: Wittenoom, Western Australia. About 3000 participated in the Vitamin A program (Alfonso et al., 2005 2079051), 1392 had at least one spirometric test completed, 573 were residents and 819 were former workers (Alfonso et al., 2004 733567).	Air (area level), Occupational Intensity of exposure for subjects that didn"t work directly asbestos was 1 fiber/ml from 1943 to 1957, 0.5 f/ml between 1958 and 1966, and 0.01 f/ml in 1992. Individual cumulative exposure was calculated using intensity of exposure and duration of residence in Wittenoom. Majority crocidolite (Alfonso et al., 2004 733567, Alfonso et al., 2005 2079051).; Asbestos - Crocidolite (riebeckite): 12001-28-4	Cumulative asbestos exposure was not a significant predictor of change in DLCO (Alfonso et al., 2005 2079051).	Medium	733567

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV1 and FVC measured in accordance to American Thoracic Society guidelines using a Vitalograph dry bellows spirometer or a Medical Graphics 1070 system.	Adults or general, Occupational; PESS included in study; Female, Male; Former asbestos mine workers and former residents of Wittenoom who participated in a vitamin A program starting in 1990: Wittenoom, Western Australia. About 3000 participated in the Vitamin A program (Alfonso et al., 2005 2079051), 1392 had at least one spirometric test completed, 573 were residents and 819 were former workers (Alfonso et al., 2004 733567).	Air (area level), Occupational Intensity of exposure for subjects that didn"t work directly asbestos was 1 fiber/ml from 1943 to 1957, 0.5 f/ml between 1958 and 1966, and 0.01 f/ml in 1992. Individual cumulative exposure was calculated using intensity of exposure and duration of residence in Wittenoom. Majority crocidolite (Alfonso et al., 2004 733567, Alfonso et al., 2005 2079051).; Asbestos - Crocidolite (riebeckite): 12001-28-4	For each additional f/ml-yr of cumulative asbestos exposure, FEV1 levels decreased by 0.9 ml (SE: 0.3; 95% CI: 0.31-1.50; p=0.001) while FVC levels decreased by 1.5 ml (SE: 0.4, 95% CI: 0.72-2.29; p<0.001).People exposed to asbestos at an earlier age had lower levels of FEV1 and FVC.Cumulative asbestos exposure was associated with an additional 8 ml/year decrease in FEV1 (SE: 0.02, p=0.001) and 10 ml/yr decrease in FVC (SE: 0.03, p=0.001).(Alfonso et al., 2004 733567)	Medium	733567
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, 10-19 years latency: 298.1 (p-value < 5%)O/E: 7/2.4 Comments: This value extracted from table 3.10, page 36.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 10-19 years latency: 304.9 (p-value < 5%)O/E: 7/2.3 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Respiratory symptom: dyspnea	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Logistic model intercept, total group: -3.7260, p-value < 5% Comments: Dyspnea was the only respiratory symptom with a significant association with f-y. Information on dyspnea is included in table 4.16 and 4.17	Medium	3100838
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.6*F-y: 0.0026*Age: 0.131** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Small opacities among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.39*Age: 0.131** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	18 with small opacities, 166 without; 10% with opacities present Comments: Information extracted from Table 4.5, page 62	Medium	3100838
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	28 individuals with any change, 156 without. 15% with changes, p-value $<$ 5% Association with fiber-years significant. Comments: This information pulled from table 4.5, page 62.	Medium	3100838
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.3*Age: 0.051** p-value $<$ 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Any pleural change among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.14*Age: 0.052** p-value $<$ 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural thickening on the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	24 individuals with pleural thickening, 160 without. 13% , p-value < 5% . Association with fiber-years significant. Comments: Information pulled from table 4.5, page 62.	Medium	3100838
Pleural thickening of the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Age: 0.046** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural thickening of the wall among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept: -4.31Age: 0.052** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, 10-19 years latency: 298.1 (p-value < 5%)O/E: 7/2.4 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 10-19 years latency: 304.9 (p-value < 5%)O/E: 7/2.3 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, 10-19 years latency: 298.1 (p-value < 5%)O/E: 7/2.4 Comments: This value extracted from table 3.10, page 36.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 10-19 years latency: 304.9 (p-value < 5%)O/E: 7/2.3 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, 10-19 years latency: 298.1 (p-value < 5%)O/E: 7/2.4 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838
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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 246.3 (95% CI: 152.4-376.5), p-value < 5% Observed/Expected: 21/8.5 Comments: This value was extracted from table 3.4, page 30. SMRs were reported for pneumonia, tuberculosis, and emphysema separately in addition to the total NMRD. The author notes that it is difficult to interpret the results for NMRD because "only 5 deaths were due to pneumoconiosis, and in only 10 cases was fibrosis certified as an underlying or contributing cause of death" (Amandus, 1986). These results were extracted from the mortality study portion. Important to note that there are more significant SMRs reported for different exposure groupings.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, 10-19 years latency: 298.1 (p-value < 5%)O/E: 7/2.4 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 10-19 years latency: 304.9 (p-value < 5%)O/E: 7/2.3 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	28 individuals with any change, 156 without. 15% with changes, p-value < 5% Association with fiber-years significant. Comments: This information pulled from table 4.5, page 62.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.3*Age: 0.051** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Any pleural change among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.14*Age: 0.052** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural calcification	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -8.0*Age: 0.097** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural calcification among current and formers smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -7.25*Age: 0.087** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural thickening on the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	24 individuals with pleural thickening, 160 without. 13% , p-value < 5% . Association with fiber-years significant. Comments: Information pulled from table 4.5, page 62.	Medium	3100838
Pleural thickening of the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Age: 0.046** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural thickening of the wall among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept: -4.31Age: 0.052** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	28 individuals with any change, 156 without. 15% with changes, p-value < 5% Association with fiber-years significant. Comments: This information pulled from table 4.5, page 62.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Any pleural change	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.3*Age: 0.051** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Any pleural change among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -4.14*Age: 0.052** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural calcification	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -8.0*Age: 0.097** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural calcification among current and formers smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -7.25*Age: 0.087** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural thickening on the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	24 individuals with pleural thickening, 160 without. 13% , p-value < 5% . Association with fiber-years significant. Comments: Information pulled from table 4.5, page 62.	Medium	3100838
Pleural thickening of the wall	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Age: 0.046** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Pleural thickening of the wall among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept: -4.31Age: 0.052** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.6*F-y: 0.0026*Age: 0.131** p-value < 5% Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small opacities among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.39*Age: 0.131** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	18 with small opacities, 166 without; 10% with opacities present Comments: Information extracted from Table 4.5, page 62	Medium	3100838
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.6*F-y: 0.0026*Age: 0.131** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838
Small opacities among current and former smokers only	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Regression coefficients: Intercept -9.39*Age: 0.131** p-value $< 5\%$ Comments: Information extracted from Table 4.11, page 69	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small opacities	Adults or general, Occupational; PESS included in study; Male; 191 men employed at a vermiculite mine/mill near Libby, Montana, USA, 1975-82	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos: 123 f-y for all workers; 119 f-y for workers with radiographs; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	18 with small opacities, 166 without; 10% with opacities present Comments: Information extracted from Table 4.5, page 62	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years: 575.5 (p-value < 1%)O/E: 10/1.7 Comments: This value extracted from Table 3.6.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years: 575.5 (p-value < 1%)O/E: 10/1.7 Comments: This value extracted from Table 3.6.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years: 575.5 (p-value < 1%)O/E: 10/1.7 Comments: This value extracted from Table 3.6.	Medium	3100838

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques in lung tissue with asbestos bodies Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 996 autopsy cases from Istituto di Anatomia e Istologia Patologica of the University of Torino from September 1977-May 1019, ages ranging from 15-over 70.	biomarker of exposure, counting asbestos bodies Biomonitoring Biomonitoring matrix: lung tissue; Asbestos bodies in 6.75mm^ 3 (grouped by 0= no bodies, I= 1-10 bodies, II=11-100 bodies, and III= >10 bodies; Asbestos - Not specified: 1332-21-4	Authors reported that asbestos bodies and pleural plaques were found more in men than women. In age groups less than and greater than 50, a statistically significant association of asbestos bodies and pleural plaques was reported. Comments: Found in the results paragraph and Table 3 (Andrion et al. 1982, HERO ID: 3083914).	Low	3083914
Pleural plaques in lung tissue with asbestos bodies Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 114 autopsy cases from Turino, Italy in September 1977-May 1019. Case control of 57 cases with pleural plaques and 57 controls without it.	biomarker of exposure, counting asbestos bodies Biomonitoring Biomonitoring matrix: lung tissue; Coated and uncoated fibres >10um in length/grams of dry lung; Asbestos - Not specified: 1332-21-4	Authors reported that cases showed a median of 380 coated fibres/gram dry weight of pulmonary tissue. Additionally, patients without any related asbestos diseases had very few coated fibres. Comments: Found in the results paragraph and discussions (Andrion et al. 1984, HERO ID: 3083599).	Low	3083914
Pleural plaques in lung tissue with asbestos bodies Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 996 autopsy cases from Istituto di Anatomia e Istologia Patologica of the University of Torino from September 1977-May 1019, ages ranging from 15-over 70.	biomarker of exposure, counting asbestos bodies Biomonitoring Biomonitoring matrix: lung tissue; Asbestos bodies in 6.75mm^ 3 (grouped by 0= no bodies, I= 1-10 bodies, II=11-100 bodies, and III= >10 bodies; Asbestos - Not specified: 1332-21-4	Authors reported that asbestos bodies and pleural plaques were found more in men than women. In age groups less than and greater than 50, a statistically significant association of asbestos bodies and pleural plaques was reported. Comments: Found in the results paragraph and Table 3 (Andrion et al. 1982, HERO ID: 3083914).	Low	3083914
Pleural plaques in lung tissue with asbestos bodies Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 114 autopsy cases from Turino, Italy in September 1977-May 1019. Case control of 57 cases with pleural plaques and 57 controls without it.	biomarker of exposure, counting asbestos bodies Biomonitoring Biomonitoring matrix: lung tissue; Coated and uncoated fibres >10um in length/grams of dry lung; Asbestos - Not specified: 1332-21-4	Authors reported that cases showed a median of 380 coated fibres/gram dry weight of pulmonary tissue. Additionally, patients without any related asbestos diseases had very few coated fibres. Comments: Found in the results paragraph and discussions (Andrion et al. 1984, HERO ID: 3083599).	Low	3083914

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
CT asbestosis score Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; Japanese asbestosis cases (total: n=33, males: n=31, females: n=2; mean age at computed tomography (CT): 73 years) who underwent high-resolution chest CT between May 2000 and July 2011.	TEM Biomonitoring asbestosis body counts for those with lung specimens Biomonitoring matrix: pulmonary tissue samples; The number of asbestos bodies, not the number of asbestos fibers, were counted by experienced technicians described as within participating institutions and utilizing transmission electron microscopy (TEM) asbestos counting methods as within Koyama et al., 1991 (HERO ID 709715).Occupational histories included: asbestos-manufacturing (n=9), shipyard workers (n=8), asbestos-spraying (n=4), boiler repair (n=2), insulation worker (n=2), plumbing worker (n=2) and others (n=5). Working years ranged from 10 to 42 years (mean=24 years).; Asbestos - Not specified: 1332-21-4	Asbestos body count positively correlated with CT likelihood of asbestosis (r=0.503, p=0.003)	Medium	3077721

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
pathological asbestosis score Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; Japanese asbestosis cases (total: n=33, males: n=31, females: n=2; mean age at computed tomography (CT): 73 years) who underwent high-resolution chest CT between May 2000 and July 2011.	TEM Biomonitoring asbestosis body counts for those with lung specimens Biomonitoring matrix: pulmonary tissue samples; The number of asbestos bodies, not the number of asbestos fibers, were counted by experienced technicians described as within participating institutions and utilizing transmission electron microscopy (TEM) asbestos counting methods as within Koyama et al., 1991 (HERO ID 709715).Occupational histories included: asbestos-manufacturing (n=9), shipyard workers (n=8), asbestos-spraying (n=4), boiler repair (n=2), insulation worker (n=2), plumbing worker (n=2) and others (n=5). Working years ranged from 10 to 42 years (mean=24 years).; Asbestos - Not specified: 1332-21-4	Asbestos body count positively correlated with pathological asbestosis score (r=0.637, p<0.001).	Medium	3077721
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960
FEV, FEV1, FEF (measured by spirometry) dyspnea, parenchymal abnormalities, pleural and/or parenchymal abnormalities, pleural plaques Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Other, Not specified; Workers from a single asbestos mining and milling company who worked for the company for at least one year were invited to participate (gender not specified/ mentioned/analyzed) (n = 3,634). Workers were divided into 3 groups based on when they worked for the company (group I: 1940-1967, group II: 1967-1976, group III: 1976-1999); working conditions improved over time.	PCM Occupational An index of the workers" asbestos exposure was calculated assuming that the cumulative amount of asbestos exposure in the lungs was proportional to intensity and duration of the inhalation "load" for each job ever held (cumulative exposure in fibres/year/cc). PCM exposure measurements were only available for workers in Group III.; Asbestos - Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Odds ratios for parenchymal and/or non-malignant pleural disease were lower in groups II and III vs. group I. OR for group II vs. group I: 0.29 (95% CI: 0.12, 0.69). OR for group III vs. group I: 0.19 (0.08, 0.45). Lower spirometric values were found in groups I and II (FVC 97.5 and 100.2, FEV1 93.9 and 94.5, FEF 81.7 and 82.3) compared to group III (FVC 104.9, FEV1 99.2, FEF 83.8): lung function values were also lower in higher quartiles of latency and of cumulative exposure in these subjects. For context, PCM-based exposure measurements were only conducted for group III; exposures for groups I and II were assessed by relating dust levels to asbestos exposure measurements of unspecified methodology and asking workers to rate the level of dust in their workplace.	Medium	2078960

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Table 4: "Odds ratios (OR) and 90% confidence intervals (CI) of pleural plaque presence and extension" Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS not included in study; Female, Male; Deceased subjects who were former workers of "a large shipyard in Montfalcone, North-East Italy, who died from asbestos-related diseases (mesothelioma, lung cancer or asbestosis)"	SEM Biomonitoring Biomonitoring matrix: lung tissue; Dry lung tissue samples from deceased subjects were analyzed for asbestos fibers.; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Adjusted linear regression models of pleural plaque grade on asbestos fiber concentration yielded a relationship, where the geometric mean fiber concentration increased as pleural plaque presence and grade increased (Table 2); for thousands of asbestos bodies, GMR 1.76 90% CI (0.57-5.46) for grade 1 vs no plaques, GMR 8.83 90% CI (3.23-24.2) for grade 2 vs. no plaques, GMR 11.3 90% CI (3.74-34.1) for grade 3 vs. no plaques; for millions of asbestos fibers, GMR 1.07 90% CI (0.39-2.89) for grade 1 vs no plaques, GMR 5.49 90% CI (2.26-13.3) for grade 2 vs. no plaques, GMR 10.2 90% CI (3.83-26.9) for grade 3 vs. no plaques. Adjusted multinomial regressions of asbestos fiber and asbestos body concentrations on pleural plaque presence and grade showed increased odds of pleural plaques of all grades with increasing asbestos concentrations (Table 4); for log10 thousands of asbestos bodies, OR 1.41 90% CI (0.68-2.94) for grade 1 vs no plaques, OR 3.97 90% CI (1.92-8.22) for grade 2 vs. no plaques, OR 4.70 90% CI (2.09-10.6) for grade 3 vs. no plaques; for log10 millions of asbestos fibers, OR 1.33 90% CI (0.45-3.86) for grade 1 vs no plaques, OR 6.27 90% CI (2.25-17.5) for grade 2 vs. no plaques, GMR 10.6 90% CI (3.49-32.3) for grade 3 vs. no plaques.	High	6861350
Prevalence of asbestosis Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS not included in study; Female, Male; Deceased subjects who were former workers of "a large shipyard in Montfalcone, North-East Italy, who died from asbestos-related diseases (mesothelioma, lung cancer or asbestosis)"	SEM Biomonitoring Biomonitoring matrix: lung tissue; Dry lung tissue samples from deceased subjects were analyzed for asbestos fibers.; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7	Table 1 reports asbestosis prevalence in the study population, according to four grades of pleural plaques' extension. All subjects with reported asbestosis had either grade 2 or grade 3 pleural plaques, with 7 out of the 9 with asbestosis having grade 2 and 2 out of the 9 with asbestosis with grade 3 plaques.	High	6861350

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory symptom–chronic cough. Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; This study examined the relationship between prevalent respiratory symptoms (chronic cough, chronic phlegm, chronic bronchitis, dyspnea) assessed through standardized interviews and asbestos exposure as represented by length of employment (years, range: 1-27 years), estimated cumulative exposure to total particles (particles/cc years), and estimated cumulative exposure to asbestos fibers (fibers/cc years) in asbestos workers (n=1127) engaged in asbestos mining, asbestos cement production, production of friction materials or the manufacture of asbestos textiles versus age-matched non-exposed controls (n=593).	PCM Occupational Measured (1971-1974) asbestos fiber concentrations (f/cc) were reported within Table 1 for each mine and factory work category and ranged from 0.3 " 62.0 f/cc for six categories of exposure. Summary measures of estimated cumulative exposures were detailed in Figure 1 footnote description of asbestos exposure categories and ranged from zero fibers/cc years to greater than 80 fibers/cc years.; Asbestos - Not specified: 1332-21-4	Figure 1: Chronic cough: p>0.05 across all exposure categories for fibers/cc years; Asbestos categories, fibers/cc years: 0-4.9; 5-9.9; 10-19.9; 20-39.9; 40-79.9; >=80.	Medium	3082482

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory symptom–chronic phlegm. Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; This study examined the relationship between prevalent respiratory symptoms (chronic cough, chronic phlegm, chronic bronchitis, dyspnea) assessed through standardized interviews and asbestos exposure as represented by length of employment (years, range: 1-27 years), estimated cumulative exposure to total particles (particles/cc years), and estimated cumulative exposure to asbestos fibers (fibers/cc years) in asbestos workers (n=1127) engaged in asbestos mining, asbestos cement production, production of friction materials or the manufacture of asbestos textiles versus age-matched non-exposed controls (n=593).	PCM Occupational Measured (1971-1974) asbestos fiber concentrations (f/cc) were reported within Table 1 for each mine and factory work category and ranged from 0.3 " 62.0 f/cc for six categories of exposure. Summary measures of estimated cumulative exposures were detailed in Figure 1 footnote description of asbestos exposure categories and ranged from zero fibers/cc years to greater than 80 fibers/cc years.; Asbestos - Not specified: 1332-21-4	Figure 1: Chronic phlegm: p>0.05 across all exposure categories for fibers/cc years; Asbestos categories, fibers/cc years: 0-4.9; 5-9.9; 10-19.9; 20-39.9; 40-79.9; >=80.	Medium	3082482

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory symptom–chronic bronchitis. Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; This study examined the relationship between prevalent respiratory symptoms (chronic cough, chronic phlegm, chronic bronchitis, dyspnea) assessed through standardized interviews and asbestos exposure as represented by length of employment (years, range: 1-27 years), estimated cumulative exposure to total particles (particles/cc years), and estimated cumulative exposure to asbestos fibers (fibers/cc years) in asbestos workers (n=1127) engaged in asbestos mining, asbestos cement production, production of friction materials or the manufacture of asbestos textiles versus age-matched non-exposed controls (n=593).	PCM Occupational Measured (1971-1974) asbestos fiber concentrations (f/cc) were reported within Table 1 for each mine and factory work category and ranged from 0.3 " 62.0 f/cc for six categories of exposure. Summary measures of estimated cumulative exposures were detailed in Figure 1 footnote description of asbestos exposure categories and ranged from zero fibers/cc years to greater than 80 fibers/cc years.; Asbestos - Not specified: 1332-21-4	Figure 1: Chronic bronchitis: p>0.05 across all exposure categories for fibers/cc years; Asbestos categories, fibers/cc years: 0-4.9; 5-9.9; 10-19.9; 20-39.9; 40-79.9; >=80.	Medium	3082482

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory symptom–dyspnea. Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; This study examined the relationship between prevalent respiratory symptoms (chronic cough, chronic phlegm, chronic bronchitis, dyspnea) assessed through standardized interviews and asbestos exposure as represented by length of employment (years, range: 1-27 years), estimated cumulative exposure to total particles (particles/cc years), and estimated cumulative exposure to asbestos fibers (fibers/cc years) in asbestos workers (n=1127) engaged in asbestos mining, asbestos cement production, production of friction materials or the manufacture of asbestos textiles versus age-matched non-exposed controls (n=593).	PCM Occupational Measured (1971-1974) asbestos fiber concentrations (f/cc) were reported within Table 1 for each mine and factory work category and ranged from 0.3 " 62.0 f/cc for six categories of exposure. Summary measures of estimated cumulative exposures were detailed in Figure 1 footnote description of asbestos exposure categories and ranged from zero fibers/cc years to greater than 80 fibers/cc years.; Asbestos - Not specified: 1332-21-4	Figure 1:Statistically significant, Chronic bronchitis: $p<0.01$ across all exposure categories for fibers/cc years; Asbestos categories, fibers/cc years: 0-4.9; 5-9.9; 10-19.9; 20-39.9; 40-79.9; >=80.	Medium	3082482
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=40 pleural mesothelioma cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Pleural mesothelioma (n=40) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 65 (57); 1980-89: 28 (21); 1990-94: 10 (26); overall: 39 (34).	Medium	709467

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pneumoconiosis and other respiratory disease mortality (ICD-9: 470-478 and 494-519). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; The study population consists of white men, black men, and white women who were employed for at least one month at a South Carolina asbestos (chrysotile) textile plant.	PCM midget impinger Occupational Exposure is reported in fibres/cm^ 3-day and ranges are listed below: <500500-1,0001,000-2,5002,500-10,00010,000-40,00040,000-100,000>100,000Total; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs of pneumoconiosis by exposure among asbestos textile workers with at least 15 years latency White men had significantly increased SMRs at exposures of 10,000-40,000, 40,000-100,000, >100,000, and total fibres/cm^ 3-day. Black men had no SMRs for the first three exposure groups, but had significantly increased SMRs at 40,000-100,000, >100,000 fibres/cm^ 3-day.White women had significantly increased SMRs at exposures of10,000-40,000, 40,000-100,000, >100,000, and total fibres/cm^ 3-day. Note that no confidence intervals were provided. * significant at p<0.05 ** significant at p<0.01White men<500: 2.17500-1,000: 2.351,000-2,500: 1.582,500-10,000: 1.7610,000-40,000: 6.47**40,000-100,000: 15.71**>100,000: 33.33**Total: 3.86**Black men<500: 500-1,000:1,000-2,500:2,500-10,000: 1.5010,000-40,000: 2.5040,000-100,000: 8.00**>100,000: 10.00Total: 1.93*White women<500: 1.15500-1,000: 0.711,000-2,500: 0.952,500-10,000: 0.6310,000-40,000: 3.33*40,000-100,000: 10.00**>100,000: 200**Total: 1.77* Comments: Results can be found in Table 7 of Brown et al., 1994, HEROID: 3081832).	Medium	3081832

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality (death certificates) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 13-country cohort of 62,937 male pulp and paper industry workers employed for at least one year between 1945 and 1996, with a mean of 23.5 years of follow-up	Occupational Available fiber measurements, combined with information on probability of exposure in each mill, department, and time period, were used by industrial hygienists to estimate each worker's exposure. 22,468 (36%) workers were classified as ever exposed. Median exposure levels were: 15 years of exposure, 35 years since first exposure, and 0.09 fibers/cc-years for cumulative exposure. Cumulative exposure quartiles were: <= 0.1 fiber/cc-years, 0.02-0.09 fiber/cc-years, 0.10-0.77 fiber/cc-years, and 0.78+ fiber/cc-years.; Asbestos - Not specified: 1332-21-4	Death certificates identified 24 pleural cancers (14 in exposed, 10 in unexposed workers). Follow-up time may have been insufficient to identify risk given the long latency for pleural cancers. Exposure misclassification (non-differential) was postulated as some of these cases occurred among maintenance and repair workers. Adjusted relative risks (95% CI) were: 2.93 (1.03-6.23) for ever exposure; 3.54 (0.66-18.8) for >35 vs 1.-3 years of exposure; and 2.06 (0.30-14.3) for 44+ vs 1-24 years since first exposure. For cumulative exposure, RRs for increasing quartiles were: 1.16 (0.25-5.37), 1.66 (0.34-8.23) and 2.43 (0.43-13.63). The association between the top quartile of cumulative exposure and lung cancer risk was 1.44 (0.85-2.45); associations were null for years of exposure and years since first exposure. Despite limitations in exposure and outcome measures, this study suggests that the carcinogenic effect of asbestos can be detected among workers employed in industries such as the pulp and paper industry, in which it is not considered to be a major hazard.	Medium	3080500
Lung and pleural cancer mortality (death certificates) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 13-country cohort of 62,937 male pulp and paper industry workers employed for at least one year between 1945 and 1996, with a mean of 23.5 years of follow-up	Occupational Available fiber measurements, combined with information on probability of exposure in each mill, department, and time period, were used by industrial hygienists to estimate each worker's exposure. 22,468 (36%) workers were classified as ever exposed. Median exposure levels were: 15 years of exposure, 35 years since first exposure, and 0.09 fibers/cc-years for cumulative exposure. Cumulative exposure quartiles were: <= 0.1 fiber/cc-years, 0.02-0.09 fiber/cc-years, 0.10-0.77 fiber/cc-years, and 0.78+ fiber/cc-years.; Asbestos - Not specified: 1332-21-4	Death certificates identified 24 pleural cancers (14 in exposed, 10 in unexposed workers). Follow-up time may have been insufficient to identify risk given the long latency for pleural cancers. Exposure misclassification (non-differential) was postulated as some of these cases occurred among maintenance and repair workers. Adjusted relative risks (95% CI) were: 2.93 (1.03-6.23) for ever exposure; 3.54 (0.66-18.8) for >35 vs 1.-3 years of exposure; and 2.06 (0.30-14.3) for 44+ vs 1-24 years since first exposure. For cumulative exposure, RRs for increasing quartiles were: 1.16 (0.25-5.37), 1.66 (0.34-8.23) and 2.43 (0.43-13.63). The association between the top quartile of cumulative exposure and lung cancer risk was 1.44 (0.85-2.45); associations were null for years of exposure and years since first exposure. Despite limitations in exposure and outcome measures, this study suggests that the carcinogenic effect of asbestos can be detected among workers employed in industries such as the pulp and paper industry, in which it is not considered to be a major hazard.	Medium	3080500

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory disease mortality Study Design: Case-Control (Nested)	Occupational; PESS included in study; Male; Cases of non-malignant (n=101) respiratory disease mortality and controls (n=183) were obtained from the Thermal Insulation Manufacturer"s Association (TIMA) historical cohort mortality study of production and maintenance workers (gender not specified) employed at the Newark, Ohio fiberglass manufacturing plant for at least one year between 1 January 1940 and 31 December 1962 and followed up to the end of 1982. Associations with malignant respiratory disease mortality (n=144 cases, n=260 controls) were also examined.	Estimated asbestos exposure (f/mL) from detailed job histories and quantitative measures of IH asbestos exposure Estimated asbestos exposure (f/mL) from detailed job histories and quantitative measures of IH asbestos exposure Summary of estimated exposures not detailed, however Table 4: Asbestos fibers/mL (f/mL) categories within adjusted conditional logistic regression models: 0 f/mL; 0.01-0.999 f/mL; 1.0-99 f/mL; and >100 f/mL. Talc (f/mL) categories: 0 f/mL; 10-999 f/mL; >1,000 f/mL;	Non-malignant respiratory disease final model (Table 4) included smoking, marital state, respirable fibers (f/mL), asbestos (f/mL), talc (f/mL), formaldehyde (f/mL), respirable silica (mg/m^ 3), and asphalt fumes (mg/m^ 3): only smoking was statistically significant with OR = 2.637 (95% CI, 1.146-6.069). None of the exposure variables produced significant OR"s, but higher OR"s were found for the higher ranked exposure levels: OR = 1.585 (95% CI, 0.479-5.245) for highest quartile (>100 f/mL) for asbestos; OR = 1.318 (95% CI, 0.621-2.798) for the second tertile (10-999 f/mL) of talc, and OR = 1.178 (95% CI, 0.461-3.010) for the highest tertile (>100 f/mL) for talc.		30090
Localized pleural thickening	Adults or general, Occupational; PESS included in study; Female, Male; 118 workers at an asbestos plant in Marysville, Ohio, USA that processed Libby vermiculate. Age ranges from 42-82 years (mean 52 years), and the mean time since first exposure until the x-rays taken in 2002-2005 was 28.2 years.	PCM Air (personal level), Air (area level), Occupational Mean (SD) cumulative exposure was 0.42 (0.77) fibers/cc-year; smokers = 0.40 (0.63) and non-smokers = 0.44 (0.91).; Asbestos- Libby amphibole: 1318-09-8	Benchmark concentration (BMC), overall: 0.36 fibers/cc-year in a Michaelis-Menten model with exposure lagged by 10 years. BMC in smokers = 0.17 fibers/cc-year; BMC in non-smokers =1.02 fibers/cc-year. Comments: The sample size was small, and there were only 12 cases of localized pleural thickening, and only 3 of these cases were non-smokers. The potential influence of any selection (attrition) bias was not evaluated; the sample included 118 workers employed after 1972 who had participated in a follow-up x-ray study; 431 workers from the original cohort were still living at the time.	Medium	1257859

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the researchers' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/g dry lung) in subjects with asbestosis (n=23) compared to those with no disease (n=8): Disease= 10 (SD: 6.6); No disease= 0.67 (SD: 5.1); (t-test p <0.001, multiple regression model accounting for presence of >1 disease [MLR] p <0.001)Mean chrysotile fiber concentration in subjects with asbestosis compared to those with no disease:: Disease= 0.005 (SD: 300); No disease= 0.035 (SD: 81); (t-test p =0.38, MLR p =0.38)Mean tremolite fiber concentration in subjects with asbestosis compared to those with no disease: Disease= 0.034 (SD: 125); No disease= 0.079 (SD: 85); (t-test p =0.67, MLR p =0.27)Regression coefficient for amosite with standard error: 2.59 (0.46), p <0.01Regression coefficient for chyrsotile with standard error: -1.15 (1.31), not statistically significantRegression coefficient for tremolite with standard error: -1.07 (0.96), not statistically significantMean amosite fiber length (microgram) with asbestosis compared to those with no disease: Disease= 6.4; No disease= 4.6; (t-test p =0.18, MLR p =0.33)Mean amosite aspect ratio with asbestosis compared to those with no disease: Disease= 45; No disease= 36; (t-test p =0.48, MLR p =0.46)	Medium	758904

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the authors' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/g dry lung) in subjects with airway fibrosis (n=16) compared to those with no disease (n=8): Disease= 4.3 (SD: 12); No disease= 0.67 (SD: 5.1); (t-test p =0.072, multiple regression model accounting for presence of >1 disease [MLR] p =0.001)Mean chrysotile fiber concentration in subjects with airway fibrosis compared to those with no disease: Disease= 0 (SD: 1000); No disease= 0.035 (SD: 81); (t-test p =0.006, MLR p =0.06)Mean tremolite fiber concentration in subjects with airway fibrosis compared to those with no disease: Disease= 0.092 (SD: 73); No disease= 0.079 (SD: 85); (t-test p =0.93, MLR p =0.82)Regression coefficient for amosite with standard error: 1.70 (0.51), p <0.01Regression coefficient for chyrsotile with standard error: -2.77 (1.45), p <0.10Regression coefficient for tremolite with standard error: 0.25 (1.06), not statistically significantMean amosite fiber length (microgram) with airway fibrosis compared to those with no disease: Disease= 6; No disease= 4.6; (t-test p =0.29, MLR p =0.64)Mean amosite aspect ratio with airway fibrosis compared to those with no disease: Disease= 37; No disease= 36; (t-test p =0.92, MLR p =0.72)	Medium	758904

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the authors' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/ g dry lung) in subjects with lung cancer (n=32) compared to those with no disease (n=8): Disease= 1.1 (SD: 8.3); No disease= 0.67 (SD: 5.1); (t-test p =0.53, multiple regression model accounting for presence of >1 disease [MLR] p =0.20)Mean chrysotile fiber concentration in subjects with lung cancer compared to those with no disease:: Disease= 0.031 (SD: 150); No disease= 0.035 (SD: 81); (t-test p =0.95, MLR p =0.30)Mean tremolite fiber concentration in subjects with lung cancer compared to those with no disease: Disease= 0.21 (SD: 13); No disease= 0.079 (SD: 85); (t-test p =0.43, MLR p =0.31)Regression coefficient for amosite with standard error: -0.63 (0.49), not statistically significantRegression coefficient for chyrsotile with standard error: 1.47 (1.39), not statistically significantRegression coefficient for tremolite with standard error: 1.03 (1.02), not statistically significantMean amosite fiber length (microgram) with lung cancer compared to those with no disease: Disease= 5.7; No disease= 4.6; (t-test p =0.39, MLR p =0.73)Mean amosite aspect ratio with lung cancer compared to those with no disease: Disease= 39; No disease= 36; (t-test p =0.80, MLR p =0.50)	Medium	758904

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the authors' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/g dry lung) in subjects with pleural plaques (n=103) compared to those with no disease (n=8): Disease= 1.4 (SD: 7.8); No disease= 0.67 (SD: 5.1); (t-test p =0.31, multiple regression model accounting for presence of >1 disease [MLR] p =0.08)Mean chrysotile fiber concentration in subjects with pleural plaques compared to those with no disease: Disease= 0.004 (SD: 250); No disease= 0.035 (SD: 81); (t-test p =0.29, MLR p =0.30)Mean tremolite fiber concentration in subjects with pleural plaques compared to those with no disease: Disease= 0.049 (SD: 65); No disease= 0.079 (SD: 85); (t-test p =0.76, MLR p =0.20)Regression coefficient for amosite with standard error: 0.66 (0.37), p <0.10Regression coefficient for chyrsotile with standard error: -1.12 (1.07), not statistically significantRegression coefficient for tremolite with standard error: -1.00 (0.78), not statistically significantMean amosite fiber length (microgram) with pleural plaques compared to those with no disease: Disease= 5.9; No disease= 4.6; (t-test p =0.32, MLR p =0.16)Mean amosite aspect ratio with pleural plaques compared to those with no disease: Disease= 40; No disease= 36; (t-test p =0.73, MLR p =0.004)	Medium	758904

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the authors' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/g dry lung) in subjects with mesothelioma (n=83) compared to those with no disease (n=8): Disease= 0.86 (SD: 7.6); No disease= 0.67 (SD: 5.1); (t-test p =0.74, multiple regression model accounting for presence of >1 disease [MLR] p =0.21)Mean chrysotile fiber concentration in subjects with mesothelioma compared to those with no disease: Disease= 0.004 (SD: 250); No disease= 0.035 (SD: 81); (t-test p =0.29, MLR p =0.67)Mean tremolite fiber concentration in subjects with mesothelioma compared to those with no disease: Disease= 0.051 (SD: 63); No disease= 0.079 (SD: 85); (t-test p =0.78, MLR p =0.81)Regression coefficient for amosite with standard error: -0.55 (0.44), not statistically significantRegression coefficient for chyrsotile with standard error: -0.54 (1.25), not statistically significantRegression coefficient for tremolite with standard error: -0.22 (0.91), not statistically significantMean amosite fiber length (microgram) with mesothelioma compared to those with no disease: Disease= 5.5; No disease= 4.6; (t-test p =0.48, MLR p =0.32)Mean amosite aspect ratio with mesothelioma compared to those with no disease: Disease= 36; No disease= 36; (t-test p =0.99, MLR p =0.077)	Medium	758904
Airway fibrosis Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Airway fibrosis patients: tremolite, geometric mean = 120 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 27 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of airway fibrosis cases than reference group. Cases = 120 vs. reference = 9 (10^ 8 fiber/g dry lung). Chrysotile concentrations were significantly higher in samples of airway fibrosis cases than reference group. Cases = 27 vs. reference = 9 (10^ 8 fiber/g dry lung). Controlling for mesothelioma and asbestosis, tremolite concentration significantly associated with airway fibrosis. Regression coefficient = 1.52 (p<0.01). Controlling for mesothelioma and asbestosis, chrysotile concentration significantly associated with airway fibrosis. Regression coefficient = 1.56 (p<0.01). Comments: Table 3, Table 5	Uninformative	1481523

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Asbestosis patients: tremolite, geometric mean = 120 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 27 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of asbestosis cases than reference group. Cases = 140 vs. reference = 9 (10^ 8 fiber/g dry lung). Chrysotile concentrations were significantly higher in samples of asbestosis cases than reference group. Cases = 30 vs. reference = 9 (10^ 8 fiber/g dry lung). Controlling for mesothelioma and airway fibrosis, tremolite concentration significantly associated with asbestosis. Regression coefficient = 1.84 (p<0.01). Controlling for mesothelioma and airway fibrosis, chrysotile concentration significantly associated with asbestosis. Regression coefficient = 1.80 (p<0.01). Comments: Table 3, Table 5	Uninformative	1481523
Pleural plaques Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Pleural plaque patients: tremolite, geometric mean = 120 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 27 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of pleural plaque cases than reference group. Cases = 75 vs. reference = 9 (10^ 8 fiber/g dry lung). Comments: Table 3	Uninformative	1481523
Asbestosis Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Asbestosis patients: tremolite, geometric mean = 120 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 27 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of asbestosis cases than reference group. Cases = 140 vs. reference = 9 (10^ 8 fiber/g dry lung). Chrysotile concentrations were significantly higher in samples of asbestosis cases than reference group. Cases = 30 vs. reference = 9 (10^ 8 fiber/g dry lung). Controlling for mesothelioma and airway fibrosis, tremolite concentration significantly associated with asbestosis. Regression coefficient = 1.84 (p<0.01). Controlling for mesothelioma and airway fibrosis, chrysotile concentration significantly associated with asbestosis. Regression coefficient = 1.80 (p<0.01). Comments: Table 3, Table 5	Uninformative	1481523

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Pleural plaque patients: tremolite, geometric mean = 120 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 27 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of pleural plaque cases than reference group. Cases = 75 vs. reference = 9 (10^ 8 fiber/g dry lung). Comments: Table 3	Uninformative	1481523
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Risk of peritoneal mesothelioma among the general population of Lombardy, Italy. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Residents from Lombardy, Italy with confirmed peritoneal mesothelioma (PeM) between 2000 and 2015 (68 cases were from 2000-2007 while 159 cases were from 2008-2015). Controls were also from Lombardy and matched to cases by area/ province of residence, gender, and age.	SYN-JEM, ReNaM questionnaire Occupational Cumulative asbestos exposure (ff/mL-years): never exposed, <0.888, <3.158, 3.158 and over; Asbestos - Not specified: 1332-21-4	Odds of peritoneal mesothelioma from ReNaM:Ever-asbestos exposure: men= 5.78 (90% CI: 3.03, 11.0), women= 8.00 (2.56, 25.0)Definite occupational exposure: men= 12.3 (5.62, 26.7), women= 14.3 (3.16, 65.0)Duration of occupational exposure among men (v. never exposed) was positively associated with PeM for all categories: <10 y= 3.15 (1.30, 7.64), 10-19 y= 7.08 (2.37, 21.2), 20-29 y= 4.25 (1.38, 13.1), 30+ y= 9.16 (4.03, 20.8). Some values were not calculated for women.Time since first occupational exposure among men (v. never exposed was positively associated with PeM for all categories: <40= 3.68 (1.17 to 11.6), 40-49 y= 7.90 (3.25 to 19.2), 50-59 y= 3.29 (1.39 to 7.78) , 60+ y= 13.3 (3.79 to 46.3). Some values were not calculated for women.Odds of peritoneal mesothelioma from SYN-JEM:Ever-asbestos exposure: men= 2.05 (90% CI: 1.39, 3.01), women= 1.62 (0.79, 3.27)Duration of occupational exposure among men (v. never exposed) was positively associated with PeM for all categories: <10 y= 1.46 (0.85 to 2.53), 10-19 y= 3.36 (1.71 to 6.61), 20-29 y= 2.14 (1.03 to 4.45), 30+ y= 2.33 (1.38 to 3.94). Some values were not calculated for women.Cumulative exposure: <0.888 ff/mL-years: men= 1.66 (0.98 to 2.82), women= 1.94 (0.70 to 5.36); <3.158 ff/mL-years: men= 1.63 (0.96 to 2.76), women= 0.99 (0.31 to 3.13); 3.158+ff/mL-years: men= 4.21 (2.36 to 7.50), women= 2.65 (0.71 to 9.87)Cumulative exposure (ff/mL-years): men= 1.33 (1.19 to 1.48), women= 1.09 (0.81 to 1.47)Cumulative exposure (ln(ff/ mLyears)): men= 2.15 (1.59 to 2.91), women= 1.25 (0.62 to 2.52)	Medium	6868714

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Radiographic profusion determined by two readers in accordance to ILO Classification	Adults or general, Occupational; PESS included in study; Male; Former male workers from a crocidolite mine and mill who applied for financial compensation for pneumoconiosis between 1947 and December 1982: (1986), Wittenoom, Western Australia. 280 had a plain chest radiograph that had been taken within 2 years of a submitted application for compensation. 136-139 were confirmed to have pneumoconiosis by observers (Cookson et al., 1986 1005616).	Casella long running thermal precipitator, Casella gravimetric dust sampler, and a Hexhlet Air (area level), Occupational Median cumulative exposure ranged from 77-91 fibers/ cubic cm/year and median duration of exposure ranged from 33-37 months (Cookson et al., 1986 1005616). Estimated geometric mean total exposure for whole population = 7 fibers/cubic cm/years (Cookson et al., 1984 3083452). Majority crocidolite; Asbestos - Crocidolite (riebeckite): 12001-28-4	Determinants of profusion (Regression coefficient with SE): log exposure= 0.346-0.088 (0.095-0.098) (p=0.0003-0.0001); time since starting work= 0.077-0.078 (0.021) (p=0.0002-0.0003); age at starting work= 0.046-0.049 (0.018) (p=0.006-0.011) (Cookson et al., 1984 3083452)	Medium	3083452
FEV1 Study Design: Case-Control	Occupational; PESS included in study; Male; Black men workers with more than 10 years of exposure to Chrysotile asbestos in Zimbabwe, as well as men with minimal dust exposure.	light microscopy Air (area level) Professional judgement Exposure was estimated using measurements from the 1980s, and professional judgement for those that had exposures prior to 1980, when measurements were not being taken.; Asbestos - Chrysotile (serpentine): 12001-29-5	Table 1 (control): Mean FEV1 = 3.30, SD = 0.56Table 2 (Exposed): Mean FEV1 = 2.94, SD = 0.64	Medium	2078970
FVC Study Design: Case-Control	Occupational; PESS included in study; Male; Black men workers with more than 10 years of exposure to Chrysotile asbestos in Zimbabwe, as well as men with minimal dust exposure.	light microscopy Air (area level) Professional judgement Exposure was estimated using measurements from the 1980s, and professional judgement for those that had exposures prior to 1980, when measurements were not being taken.; Asbestos - Chrysotile (serpentine): 12001-29-5	Table 1 (control): Mean FVC = 4.03, SD = 0.66; Table 2 (exposed): Mean FVC = 3.63, SD = 0.71	Medium	2078970

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural disease Study Design: Case-Control	Occupational; PESS included in study; Male; Black men workers with more than 10 years of exposure to Chrysotile asbestos in Zimbabwe, as well as men with minimal dust exposure.	light microscopy Air (area level) Professional judgement Exposure was estimated using measurements from the 1980s, and professional judgement for those that had exposures prior to 1980, when measurements were not being taken.; Asbestos - Chrysotile (serpentine): 12001-29-5	Text in p. 8: "Pleural disease was also surprisingly uncommon, present in a total of 27 cases, bilateral in 17 and unilateral in ten. Eighty-eight of the subjects (33%) had parcnchymal changes consistent with pneumoconiosis. In 6.5 (24.6%) these were grade 011, 19 (7.2%) were grade 1/0, four (1.5%) were 1/1. No higher grade change was noted. "	Medium	2078970
Pneumoconiosis Study Design: Cross-Sectional	Occupational; PESS may not included in study; ; 52 workers from an asbestos factory	Native microscopic slides Biomonitoring Biomonitoring matrix: Sputum; Asbestos bodies were categorized into three groups: 1-5 asbestos bodies; 6 - 10 asbestos bodies; and over 10 asbestos bodies; Asbestos - Not specified: 1332-21-4	Chi-squared test resulted in no statistically significant difference between asbestos bodies in the sputum and the radiographic pneumoconiotic changes ($x2 = 4.65$; $p > 0.05$) Comments: Table 2	Uninformative	3082920

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: FVC Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. FVC: (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup -0.004 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: FEV1 Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. FEV1: (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup 0.017 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: FEV% Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. FEV% : (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup 0.059 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: MEF25 Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. MEF25: (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup -0.005 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Carbon monoxide single breath washout results: TLco Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. TLco: (i) differences exposed vs unexposed coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$; (ii) partial correlation with lifetime exposure in subgroup -0.048 (ns). Comments: Exposure measurement error is a concern: the very short fibers (<0.4 μm) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Nitrogen single breath washout results: CV% Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. CV% : (i) differences exposed vs unexposed coefficient $\pm$ SE -1.572 $\pm$ 0.756, $p<0.05$; (ii) partial correlation with lifetime exposure in subgroup 0.367 ($p<0.05$). Comments: Exposure measurement error is a concern: the very short fibers (<0.4 μm) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: TLC Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. TLC: (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup 0.023 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Spirometry results: RV Study Design: Cross-Sectional	Occupational; PESS included in study; Male; Auto mechanics in Sweden exposed to low levels of asbestos for 15 years or more with no exposure to other lung irritants	PCM Air (area level) Median estimates: annual asbestos concentrations = 0.08 fibers/ml, and lifetime asbestos exposure = 2.3 fiber years/mL.; Asbestos-Exposure reported as PCM or TEM (including conversion factors for dust)	Analyses evaluated: (i) lung function among exposed vs. unexposed individuals; and (ii) lung function associated with increasing exposure. Results for both analyses were null for 7 of the 9 lung function measures: FVC, FEV1, FEV% , MEF25 [maximal expiratory flow 25-75%], TLC [total lung capacity], RV [residual volume], and Phase III [slope of the alveolar plateau]. Exposed mechanics had significantly lower TLco [transfer factor from carbon monoxide washout]: adjusted coefficient $\pm$ SE -2.443 $\pm$ 1.057 $p<0.05$. Although being exposed was associated with significantly lower CV% [closing volume from nitrogen washout; -1.572 $\pm$ 0.756, $p<0.05$], higher lifetime exposure among the subgroup of mechanics also exposed to diesel was associated with higher CV% : adjusted partial correlation 0.367 ($p<0.05$). For comparison, the smoking-TLco association was significantly negative, and smoking-CV% significantly positive. Both TLco and CV% were described as sensitive for early detection of lung function declines. RV: (i) ns differences exposed vs unexposed (not shown); (ii) partial correlation with lifetime exposure in subgroup 0.042 (ns). Comments: Exposure measurement error is a concern: the very short fibers ($<0.4\ \mu$m) in asbestos dust from brakes are not captured by PCM. Exposure may be underestimated. Potential selection bias is also a concern: evaluating mechanics actively employed for >15y may induce a healthy worker bias. First, less healthy workers are more likely to be selected out of these posts in a shorter timeframe. Second, the comparison group may have had a shorter average employment duration and included unemployed individuals, with health profiles more similar to those of the general population than the active workforce with consistent long-term employment. This would potentially attenuate any disparity in lung function. An additional concern is the exclusion of 61% of exposed and 72% of unexposed candidate participants due to exposure to common lung irritants often found in auto workshops, which may have yielded a sample unrepresentative of the target population's exposure-outcome distribution.	Medium	2248426

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Chrysotile lung fiber burden (x106 fibers/g lung), geometric mean (range), controls (n=31): 4.4 (0-20.1); mesothelioma cases (n=117): 7.1 (0-2,506). Total lung fibers (x106 fibers/g lung), geometric mean (range), controls (n=31): 10.5 (0-83.1); mesothelioma cases (n=117): 77.5 (1.2-3,105). A total of 98% of malignant mesothelioma cases had lung amphibole counts greater than the mean count in the controls. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female; n=177 female malignant mesothelioma cases 1963-1990 (geographic origin not detailed) and n=31 female controls from Exeter, Liverpool, Belfast, Dublin, and Cardiff with no initially known exposure history to dusts and no mesothelioma or lung cancer. Cases (n=102 of total n=177) with age data were described as being of mean (range) age 60.5 years (18-89 years) with n=31 controls aged 68 years (30-93 years).	TEM Biomonitoring Biomonitoring matrix: background lung tissue; Chrysotile lung fiber burden (x106 fibers/g lung), geometric mean (range), controls (n=31): 4.4 (0-20.1); mesothelioma cases (n=117): 7.1 (0-2,506). Total lung fibers (x106 fibers/g lung), geometric mean (range), controls (n=31): 10.5 (0-83.1); mesothelioma cases (n=117): 77.5 (1.2-3,105).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5	No fibrosis was found in 26 controls, four showed grade 1 fibrosis, and one control (with cryptogenic fibrosing alveolitis) had grade 4 fibrosis. Lung fiber burden across fibrosis grades in cases was presented in Table 3. A total of 98% of malignant mesothelioma cases had lung amphibole counts greater than the mean count in the controls. Comments: Formal statistical analyses were not conducted.	Low	718578
Fibrosis was graded in background lung for n=152 mesothelioma cases and n=31 controls. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female; n=177 female malignant mesothelioma cases 1963-1990 (geographic origin not detailed) and n=31 female controls from Exeter, Liverpool, Belfast, Dublin, and Cardiff with no initially known exposure history to dusts and no mesothelioma or lung cancer. Cases (n=102 of total n=177) with age data were described as being of mean (range) age 60.5 years (18-89 years) with n=31 controls aged 68 years (30-93 years).	TEM Biomonitoring Biomonitoring matrix: background lung tissue; Chrysotile lung fiber burden (x106 fibers/g lung), geometric mean (range), controls (n=31): 4.4 (0-20.1); mesothelioma cases (n=117): 7.1 (0-2,506). Total lung fibers (x106 fibers/g lung), geometric mean (range), controls (n=31): 10.5 (0-83.1); mesothelioma cases (n=117): 77.5 (1.2-3,105).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5	(Table 3) Fibrosis was graded in background lung for n=152 mesothelioma cases and n=31 controls. No fibrosis was found in n=26 controls, while n=4 controls showed a grade 1 fibrosis and one control with cryptogenic fibrosing alveolitis had grade 4 fibrosis. More severe fibrosis in patients with malignant mesothelioma was associated with increasing amphibole and total fiber counts. Comments: Formal statistical analyses were not conducted.	Low	718578

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Effects of exposure related variables on the rate of onset of diffuse pleural thickening Study Design: Cohort (Retrospective)	Occupational; PESS may not included in study; Male; "384 men who worked at the Wittenoom crocidolite mine and mill between 1943 and 1966 and who applied for pneumoconiosis compensation between 1948 and 1982"	Air (area level) The authors did not provide sufficient details about how the exposure was measured: "The concentrations of airborne respirable fibres of crocidolite > 5 microns in length were measured in various workplaces in a survey of the industry undertaken on behalf of the Mines Department of Western Australia in 1966."; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 4 shows detailed rate ratios' results evaluating the impact of: total cumulative exposure, years of first exposure, duration of exposure, intensity of exposure, site of work and age at radiograph, on the rate of onset of diffuse pleural thickening. No large or consistent effects were found for any of the covariates.	Medium	3082741
Effects of exposure related variables on the rate of progression of diffuse pleural thickening Study Design: Cohort (Retrospective)	Occupational; PESS may not included in study; Male; "384 men who worked at the Wittenoom crocidolite mine and mill between 1943 and 1966 and who applied for pneumoconiosis compensation between 1948 and 1982"	Air (area level) The authors did not provide sufficient details about how the exposure was measured: "The concentrations of airborne respirable fibres of crocidolite > 5 microns in length were measured in various workplaces in a survey of the industry undertaken on behalf of the Mines Department of Western Australia in 1966."; Asbestos - Crocidolite (riebeckite): 12001-28-4	See Table 5 for detailed rate ratios' results evaluating the impact of: total cumulative exposure, years of first exposure, duration of exposure, intensity of exposure, site of work and age at radiograph, on the rate of progression of diffuse pleural thickening. Results presented in table 5 showed no substantial effect of any exposure variable on the rate of progression.	Medium	3082741
Effects of exposure related variables on the rate of onset of diffuse pleural thickening Study Design: Cohort (Retrospective)	Occupational; PESS may not included in study; Male; "384 men who worked at the Wittenoom crocidolite mine and mill between 1943 and 1966 and who applied for pneumoconiosis compensation between 1948 and 1982"	Air (area level) The authors did not provide sufficient details about how the exposure was measured: "The concentrations of airborne respirable fibres of crocidolite > 5 microns in length were measured in various workplaces in a survey of the industry undertaken on behalf of the Mines Department of Western Australia in 1966."; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 4 shows detailed rate ratios' results evaluating the impact of: total cumulative exposure, years of first exposure, duration of exposure, intensity of exposure, site of work and age at radiograph, on the rate of onset of diffuse pleural thickening. No large or consistent effects were found for any of the covariates.	Medium	3082741

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Effects of exposure related variables on the rate of progression of diffuse pleural thickening Study Design: Cohort (Retrospective)	Occupational; PESS may not included in study; Male; "384 men who worked at the Wittenoom crocidolite mine and mill between 1943 and 1966 and who applied for pneumoconiosis compensation between 1948 and 1982"	Air (area level) The authors did not provide sufficient details about how the exposure was measured: "The concentrations of airborne respirable fibres of crocidolite > 5 microns in length were measured in various workplaces in a survey of the industry undertaken on behalf of the Mines Department of Western Australia in 1966."; Asbestos - Crocidolite (riebeckite): 12001-28-4	See Table 5 for detailed rate ratios' results evaluating the impact of: total cumulative exposure, years of first exposure, duration of exposure, intensity of exposure, site of work and age at radiograph, on the rate of progression of diffuse pleural thickening. Results presented in table 5 showed no substantial effect of any exposure variable on the rate of progression.	Medium	3082741
Asbestosis and lung cancer Study Design: Cohort (Retrospective), Case-Control, Case-Control (Nested)	Adults or general, Occupational; PESS included in study; Male; Of 6500 known employees of the Australian Blue Asbestos Company between 1943 and 1966, 2928 occupational workers from this asbestos company (men and women) responded to a survey. "Satisfactory replies were received from 2400 men and 149 women". 2400 of those respondents were men and were included in the cohort for this study.	A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites in 1966. Supplemented by subjective ranking of level of dust.iness Air (area level), Occupational "A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites at Wittenoom in 1966. These measurements were used to obtain estimates of fibre concentrations for all 87 job categories in the various worksites." This survey was supplemented by subjective ranking of the degree of dustiness provided by an ex-superintendent of operations at Wittenoom, and verified by the industrial hygienist who conducted the 1966 survey. Mean cumulative exposure (f/ml-years) was 49 for cases, and 26 for controls.; Asbestos - Crocidolite (riebeckite): 12001-28-4	40 cases of lung cancer, 66 cases of compensatable asbestosis, with incidence of both lung cancer and asbestosis greatest in subjects with highest levels of exposure to crocidolite and in ex-smokers. Mean duration of exposure to crocidolite for cases of lung cancer was nearly twice that of the control subjects (table 1). The relative risk of lung cancer was also significantly related to cumulative exposure to crocidolite. The mean duration of exposure to crocidolite was nearly three times as high in the 66 subjects with asbestosis as in the 2647 control subjects (table 4).	Low	3082378

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis and lung cancer Study Design: Cohort (Retrospective), Case-Control, Case-Control (Nested)	Adults or general, Occupational; PESS included in study; Male; Of 6500 known employees of the Australian Blue Asbestos Company between 1943 and 1966, 2928 occupational workers from this asbestos company (men and women) responded to a survey. "Satisfactory replies were received from 2400 men and 149 women". 2400 of those respondents were men and were included in the cohort for this study.	A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites in 1966. Supplemented by subjective ranking of level of dust.iness Air (area level), Occupational "A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites at Wittenoom in 1966. These measurements were used to obtain estimates of fibre concentrations for all 87 job categories in the various worksites." This survey was supplemented by subjective ranking of the degree of dustiness provided by an ex-superintendent of operations at Wittenoom, and verified by the industrial hygienist who conducted the 1966 survey. Mean cumulative exposure (f/ml-years) was 49 for cases, and 26 for controls.; Asbestos - Crocidolite (riebeckite): 12001-28-4	40 cases of lung cancer, 66 cases of compensatable asbestosis, with incidence of both lung cancer and asbestosis greatest in subjects with highest levels of exposure to crocidolite and in ex-smokers. Mean duration of exposure to crocidolite for cases of lung cancer was nearly twice that of the control subjects (table 1). The relative risk of lung cancer was also significantly related to cumulative exposure to crocidolite. The mean duration of exposure to crocidolite was nearly three times as high in the 66 subjects with asbestosis as in the 2647 control subjects (table 4).	Low	3082378
Lung cancer mortality, pneumoconiosis mortality, stomach cancer mortality Study Design: Case-Control	Occupational; PESS included in study; Male; Males previously employed at the Wittenoom Gorge from 1943-1966, who completed radiographs at the Perth Chest Clinic after starting work at the gorge.	provides concentrations of airborne respirable fibres greater than 5u from 1966. Tool of measurement not stated Air (area level), Air (indoor) Cumulative exposure (f/mL-years), or by radiographic results (abnormal); Asbestos - Crocidolite (riebeckite): 12001-28-4	Lung cancer: -Significant results reported for relative risk of lung mortality from asbestos exposure by log cumulative exposure 2.5 (1.6, 4.0 pvalue <0.001). (table 3)-Estimated changes in relative risk of death from lung cancer and cumulative exposure to asbestos reported a lower risk than in mesothelioma and asbestosis. Stomach cancer & Pneumoconiosis: Stomach cancer (n= 2 deaths) and Pneumoconiosis (n=9 deaths) are reported in table 1 but seem to be excluded from analyses.	Low	3081932

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Squamous cell carcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to SCC and exposure to crocidolite when adjusted for smoking reported increased risk of 1.5 (1.1-2.0) of cumulative exposure (cases=19, controls=1110). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as ex-smokers <10 y 10.5 (1.4,78.7), current smokers >20/day 9.7 (2.1, 44.2). There was a non significant increased risk for current smokers 0-19/day.	Medium	3081494
Adenocarcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.3 (1.0, 1.7) of cumulative exposure (cases=22, controls=1132). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as current smokers >20/day 3.2 (1.0, 10.7)and current smokers 0-19/day 3.8 (1.2, 12.4). There was a non significant increased risk for ex-smokers.	Medium	3081494
Undifferentiated large cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 2.1 (1.0, 4.3) of cumulative exposure (cases=8, controls=436). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported current smoker categories with nonsignificant risks. Current smokers 0-19/day found nonsignificant increases, while current smokers >20 found nonsignificant decreased risk.Ex-smokers found null results of relative risk for undifferentiated large cell cancer.	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.1 (0.8, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significant increased risks for ex-smokers 14.7 (1.4, 151.9). Both Current smokers categories reported increased risks: 0-19/day reported 5.2 (0.5, 58.5) and 20>/day reported 8.9 (1.0, 78.2)	Medium	3081494
All lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.4 (1.2, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significantly increased risks for ex-smokers 9.2 (3.2, 26.5), current smokers 0-19/day 5.7 (2.2, 14.7), and current smokers >20/day 7.8(3.3, 18.6)	Medium	3081494
Squamous cell carcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to SCC and exposure to crocidolite when adjusted for smoking reported increased risk of 1.5 (1.1-2.0) of cumulative exposure (cases=19, controls=1110). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as ex-smokers <10 y 10.5 (1.4,78.7), current smokers >20/day 9.7 (2.1, 44.2). There was a non significant increased risk for current smokers 0-19/day.	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Adenocarcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.3 (1.0, 1.7) of cumulative exposure (cases=22, controls=1132). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as current smokers >20/day 3.2 (1.0, 10.7)and current smokers 0-19/day 3.8 (1.2, 12.4). There was a non significant increased risk for ex-smokers.	Medium	3081494
Undifferentiated large cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 2.1 (1.0, 4.3) of cumulative exposure (cases=8, controls=436). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported current smoker categories with nonsignificant risks. Current smokers 0-19/day found nonsignificant increases, while current smokers >20 found nonsignificant decreased risk.Ex-smokers found null results of relative risk for undifferentiated large cell cancer.	Medium	3081494
Small cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.1 (0.8, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significant increased risks for ex-smokers 14.7 (1.4, 151.9). Both Current smokers categories reported increased risks: 0-19/day reported 5.2 (0.5, 58.5) and 20>/day reported 8.9 (1.0, 78.2)	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.4 (1.2, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significantly increased risks for ex-smokers 9.2 (3.2, 26.5), current smokers 0-19/day 5.7 (2.2, 14.7), and current smokers >20/day 7.8(3.3, 18.6)	Medium	3081494
Squamous cell carcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to SCC and exposure to crocidolite when adjusted for smoking reported increased risk of 1.5 (1.1-2.0) of cumulative exposure (cases=19, controls=1110). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as ex-smokers <10 y 10.5 (1.4,78.7), current smokers >20/day 9.7 (2.1, 44.2). There was a non significant increased risk for current smokers 0-19/day.	Medium	3081494
Adenocarcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.3 (1.0, 1.7) of cumulative exposure (cases=22, controls=1132). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as current smokers >20/day 3.2 (1.0, 10.7)and current smokers 0-19/day 3.8 (1.2, 12.4). There was a non significant increased risk for ex-smokers.	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Undifferentiated large cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 2.1 (1.0, 4.3) of cumulative exposure (cases=8, controls=436). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported current smoker categories with nonsignificant risks. Current smokers 0-19/day found nonsignificant increases, while current smokers >20 found nonsignificant decreased risk.Ex-smokers found null results of relative risk for undifferentiated large cell cancer.	Medium	3081494
Small cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.1 (0.8, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significant increased risks for ex-smokers 14.7 (1.4, 151.9). Both Current smokers categories reported increased risks: 0-19/day reported 5.2 (0.5, 58.5) and 20>/day reported 8.9 (1.0, 78.2)	Medium	3081494
All lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.4 (1.2, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significantly increased risks for ex-smokers 9.2 (3.2, 26.5), current smokers 0-19/day 5.7 (2.2, 14.7), and current smokers >20/day 7.8(3.3, 18.6)	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Squamous cell carcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to SCC and exposure to crocidolite when adjusted for smoking reported increased risk of 1.5 (1.1-2.0) of cumulative exposure (cases=19, controls=1110). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as ex-smokers <10 y 10.5 (1.4,78.7), current smokers >20/day 9.7 (2.1, 44.2). There was a non significant increased risk for current smokers 0-19/day.	Medium	3081494
Adenocarcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.3 (1.0, 1.7) of cumulative exposure (cases=22, controls=1132). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as current smokers >20/day 3.2 (1.0, 10.7)and current smokers 0-19/day 3.8 (1.2, 12.4). There was a non significant increased risk for ex-smokers.	Medium	3081494
Undifferentiated large cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 2.1 (1.0, 4.3) of cumulative exposure (cases=8, controls=436). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported current smoker categories with nonsignificant risks. Current smokers 0-19/day found nonsignificant increases, while current smokers >20 found nonsignificant decreased risk.Ex-smokers found null results of relative risk for undifferentiated large cell cancer.	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.1 (0.8, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significant increased risks for ex-smokers 14.7 (1.4, 151.9). Both Current smokers categories reported increased risks: 0-19/day reported 5.2 (0.5, 58.5) and 20>/day reported 8.9 (1.0, 78.2)	Medium	3081494
All lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.4 (1.2, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significantly increased risks for ex-smokers 9.2 (3.2, 26.5), current smokers 0-19/day 5.7 (2.2, 14.7), and current smokers >20/day 7.8(3.3, 18.6)	Medium	3081494
Squamous cell carcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to SCC and exposure to crocidolite when adjusted for smoking reported increased risk of 1.5 (1.1-2.0) of cumulative exposure (cases=19, controls=1110). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as ex-smokers <10 y 10.5 (1.4,78.7), current smokers >20/day 9.7 (2.1, 44.2). There was a non significant increased risk for current smokers 0-19/day.	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Adenocarcinoma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.3 (1.0, 1.7) of cumulative exposure (cases=22, controls=1132). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as current smokers >20/day 3.2 (1.0, 10.7)and current smokers 0-19/day 3.8 (1.2, 12.4). There was a non significant increased risk for ex-smokers.	Medium	3081494
Undifferentiated large cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 2.1 (1.0, 4.3) of cumulative exposure (cases=8, controls=436). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported current smoker categories with nonsignificant risks. Current smokers 0-19/day found nonsignificant increases, while current smokers >20 found nonsignificant decreased risk.Ex-smokers found null results of relative risk for undifferentiated large cell cancer.	Medium	3081494
Small cell cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls=3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.1 (0.8, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significant increased risks for ex-smokers 14.7 (1.4, 151.9). Both Current smokers categories reported increased risks: 0-19/day reported 5.2 (0.5, 58.5) and 20>/day reported 8.9 (1.0, 78.2)	Medium	3081494

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Male Wittenoom workers (worked from 1943-1966, follow-up from 1979-1991) from Western Australia (cases=71, controls= 3163)	Air (personal level) Controls: Mean duration (days): 388Mean intensity (f/ml): 25.2Mean time since first exposure (y): 29.3Squamous cell carcinoma (SCC):Mean duration (days): 781Mean intensity (f/ml): 38.4Mean time since first exposure (y): 29.5; Asbestos - Crocidolite (riebeckite): 12001-28-4	Relative risk to adenocarcinoma and exposure to crocidolite when adjusted for smoking reported increased risk of 1.4 (1.2, 1.6) of cumulative exposure (cases=13, controls=754). When adjusted for exposure to asbestos, smoking and lung cancer relative risks were reported as significantly increased risks for ex-smokers 9.2 (3.2, 26.5), current smokers 0-19/day 5.7 (2.2, 14.7), and current smokers >20/day 7.8(3.3, 18.6)	Medium	3081494
Lung cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for lung cancer mortality for cumulative dose groups:<10,000 f/cc days = 223, $p < 0.05$;10,000 - 40,000 f/cc days = 367, $p < 0.01$;40,000 - 100,000 f/cc days = 978, $p < 0.01$;100,000 - 200,000 f/cc days = 5,000, $p < 0.05$;Total = 399, $p < 0.01$ Comments: Table 6-1	Medium	6884448
Other nonmalignant respiratory diseases (asbestosis, fibrosis lung, lung abscesses, pulmonary emphysema, pulmonary congestion & edema) mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for other nonmalignant respiratory diseases mortality for cumulative dose groups:<10,000 f/cc days = 71, ns;10,000 - 40,000 f/cc days = 897, $p < 0.01$;40,000 - 100,000 f/cc days = 1,842, $p < 0.01$;100,000 - 200,000 f/cc days = 2,500, $p < 0.05$;Total = 642, $p < 0.01$ Comments: Table 6-1	Medium	6884448

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis or pulmonary fibrosis mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	Incidence density rates/1,000 person-years for asbestosis/pulmonary fibrosis mortality over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 0.32. 1,000-10,000 fiber/cc-days: 0.18. 10,000-40,000 fiber/cc-days: 1.98. 40,000-100,000 fiber/cc-days: 5.99. >100,000 fiber/cc-days: 15.87. Comments: Asbestosis/pulmonary fibrosis deaths were combined. Numbers were sparse in some exposure categories as this outcome is rare.	Medium	67
Other non-malignant respiratory disease mortality (excludes infectious) assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for other non-malignant respiratory diseases over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 362 (p<0.05). 1,000-10,000 fiber/cc-days: -. 10,000-40,000 fiber/cc-days: 897 (p<0.05). 40,000-100,000 fiber/cc-days: 1842 (p<0.05). >100,000 fiber/cc-days: 2500 (p<0.05).	Medium	67
Lung cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for lung cancer mortality over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 140. 1,000-10,000 fiber/cc-days: 279 (p<0.05). 10,000-40,000 fiber/cc-days: 352 (p<0.05). 40,000-100,000 fiber/cc-days: 1099 (p<0.05). >100,000 fiber/cc-days: 1818 (p<0.05).	Medium	67

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis mortality Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Fixed cohort of 586 male workers employed >= 1 year at a Chinese chrysotile asbestos textile factor at the baseline in 1972, followed to ascertain mortality through 2006. Former workers and workers employed after 1972 were excluded.	PCM Air (area level) Mean exposure concentrations were estimated as 28.3 f/mL before the 1970s and 13.8 f/mL from 1970-1990. The estimated average cumulative exposure was 126.1 (181.1) f-year/mL. Exposure estimated as dust counts (methods not described) were converted to f/mL based on a linear model using data from paired samples.; Asbestos - Chrysotile (serpentine): 12001-29-5	The relative risk for asbestosis mortality was 10.4 for 40 years of exposure to 1 f/mL of asbestos. Healthy worker survivor bias related to using a fixed cohort of individuals employed >=1 year at baseline could have shifted associations towards the null. The low exposure group may over-represent individuals whose employment duration was short due to poorer health, while the more highly exposed long-term workers may over-represent less vulnerable "survivors". Comments: Exposure was considerably higher than in Western studies of chrysotile asbestos textile workers. The authors attribute the high levels of exposure to legislation and management delays. No details were provided on dust measures, and membrane filter air sampling was infrequent. Parameter estimates for lung cancer detailed in an online supplement (requested).	Medium	2573093
mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	Mesothelioma mortality positively associated with exposure among workers when compared with the US general population; SMR (95% CI) = 10.5 (1.3-38.0), p-value<0.05. Comments: SMR were age and calendar year adjusted.	Low	1066036
Cancer of the lung, trachea, and bronchus mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the lung, trachea, and bronchus mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 0.9 (0.5-1.5). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 15.4 (0.4-85.9). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036
Chronic obstructive pulmonary disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 1.0 (0.4-1.9). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036
Other respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 0.8 (0.1-3.0). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	The relative risk for lung cancer in the highest average exposure level tertile was four times that of the lowest (HR, 95% CI = 3.99, 1.15-13.86) (Clin et al. 2011, HERO ID: 3078903). No significant results for cumulative exposure index analyses.		3520580
Pleural and peritoneal mesothelioma assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No significant results were observed in Clin et al. 2011, HERO ID: 3078903.	High	3520580

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
parenchymal and pleural abnormalities and opacities	Occupational; PESS not included in study; Male; 820 men belonging to a asbestos insulation material manufacturing plant in Paterson, New Jersey were followed from 1961 to 1982. Groups of workers had been working for varying lengths of time.	Air (indoor) Exposure was estimated on professional judgement by using information on job tile and duration of service for each subject. The fibre count estimates were used to derive the average fibre concentration and cumulative exposure for each subject.; Asbestos - Amosite (grunerite): 12172-73-5	Results conclude that:1. exposure for as little as a month was sufficient to produce radiological signs of parenchymal and pleural fibrosis, 2. no cumulative exposure threshold for parenchymal and pleural fibrosis was detectable, and3. parenchymal and pleural progression were still detectable > 20 years after the end of exposure.	Low	709723
parenchymal and pleural abnormalities and opacities	Occupational; PESS not included in study; Male; 820 men belonging to a asbestos insulation material manufacturing plant in Paterson, New Jersey were followed from 1961 to 1982. Groups of workers had been working for varying lengths of time.	Air (indoor) Exposure was estimated on professional judgement by using information on job tile and duration of service for each subject. The fibre count estimates were used to derive the average fibre concentration and cumulative exposure for each subject.; Asbestos - Amosite (grunerite): 12172-73-5	Results conclude that:1. exposure for as little as a month was sufficient to produce radiological signs of parenchymal and pleural fibrosis, 2. no cumulative exposure threshold for parenchymal and pleural fibrosis was detectable, and3. parenchymal and pleural progression were still detectable > 20 years after the end of exposure.	Low	709723
Asbestosis confirmed by MDCT and CXR	Adults or general, Occupational; PESS included in study; Other, Not specified; Germany power industry workers cohort (2002-2013), Germany, 3257 workers (sex not specified)	Occupational Computer program estimate Workers with CXR results: asbestos, mean 42.2 fiber years. Workers with MDCT results: asbestos, mean 78.6 fiber years.; Asbestos - Not specified: 1332-21-4	CXR result: Adjusting for age, an inverted effect of asbestos exposure on asbestosis OR = 0.32 (95% CI, 0.12-0.82, p = 0.0186) for >1-25 fiber years vs. <= 1 fiber year. The invert association and significance remained when adjust for latency or exposure durations.MDCT result: No statistically significant result identified between asbestos exposure and asbestosis.	Medium	3077968
Pleural plaques confirmed by MDCT and CXR	Adults or general, Occupational; PESS included in study; Other, Not specified; Germany power industry workers cohort (2002-2013), Germany, 3257 workers (sex not specified)	Occupational Computer program estimate Workers with CXR results: asbestos, mean 42.2 fiber years. Workers with MDCT results: asbestos, mean 78.6 fiber years.; Asbestos - Not specified: 1332-21-4	CXR result: Adjusting for age, the associations between cumulative asbestos exposure and pleural plaques are statistically significant OR = 1.43 (95% CI, 1.01-2.05, p = 0.047) for >1-25 fiber years vs. <= 1 fiber year; OR = 1.64 (95% CI, 1.11-2.42, p = 0.0128 for >=25 fiber years vs. <= 1 fiber year. The results are not significant when adjust for latency or exposure durations.MDCT result: Adjusting for age, the associations between cumulative asbestos exposure and pleural plaques are statistically significant OR = 2.54 (95% CI, 1.12-5.76, p = 0.253) for >=25 fiber years vs. <= 1 fiber year.	Medium	3077968

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diffuse pleural thickening confirmed by CXR	Adults or general, Occupational; PESS included in study; Other, Not specified; Germany power industry workers cohort (2002-2013), Germany, 3257 workers (sex not specified)	Occupational Computer program estimate Workers with CXR results: asbestos, mean 42.2 fiber years. Workers with MDCT results: asbestos, mean 78.6 fiber years.; Asbestos - Not specified: 1332-21-4	CXR result: The association between cumulative asbestos exposure and diffuse pleural thickening is not statistically significant in all models. Comments: Diffuse pleural thickening not measured by MDCT.	Medium	3077968
Pleural malignant mesothelioma measured using morphological confirmation of diagnosis. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Residents of Casala Monferrato and the surrounding area: (2001-2006), Italy, 223 cases and 348 controls	TEM Air (area level), Occupational No central tendency provided - in analysis groups are presented from less than 1 f/ml-year to greater than 10 f/ml-years. Majority chrysotile and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Adjusted odds ratio (95% CI) for PMM in exposure groups compared to the background level of (<0.1 f/ml-years):>=0.1-<1 f/ml-years = 4.4 (1.7, 11.3);>=1-<10 f/ml-years = 17.5 (7.3, 41.8);>=10 f/ml-years = 62.1 (22.2, 173.2) Comments: Table 2, all subjects	Medium	3008803
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137
Respiratory function	Occupational; PESS included in study; Male; Male employees at an asbestost cement factory who were hired before 1960, worked at the factory for 9+ years, and worked in a position with known asbestos exposure for 12+ months.	PCM Air (personal level) Asbestos fibers/mL air * years exposed squared (f/mL*^ 2); Asbestos - Not specified: 1332-21-4	Table 2 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.FVC: -1.77 (-5.3, 1.8)FEV1: 0.63 (-2.4, 3.6)FEV1/FVC: 0.98 (0.89, 1.07)FVC% , Knudson et al: 98.6 (92.7, 104.4)FEV% , Morris et al: 101.3 (94.7, 107.8)FVC diff, Knudson et al: 3.46 (0.35, 6.6)FVC diff, Morris et al: -0.42 (-0.67, -0.18)FEV1 diff, Knudson et al: 3.63 (0.97, 6.3)FEV1 diff, Morris et al: NSTable 4 - regression coefficients (95% CI) for outcome per unit increase in asbestos exposure, with independent terms for age, height, and smoking.DLCO: 31.4 (-6.2, 69.1)DLCO % predicted: 84.3 (75.3, 93.3)TLC: -7.5 (-15.0, -0.03)KCO: 8.9 (3.2, 14.6)Regression results for FVC, FEV1, FVC% , FEV1% , TLC, and DLCO presented with stratification by smoking status in Table 3 (not extracted).	Medium	2248137

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency; Cumulative exposure from first exposure; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Lung cancer SMR among workers without asbestosis (n=12) was significantly elevated at 20 year latency (5.53 [2.86-9.66], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=4) was significantly elevated at 20 year latency (9.96 [2.71, 25.50], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 20 year latency due to overlap in CIs.Lung cancer SMR among workers without asbestosis (n=9) was significantly elevated at 25 year latency (5.81 [2.66-11.00], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=2) was significantly elevated at 25 year latency (9.20 [1.11-33.00], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 25 year latency due to overlap in CIs.No reported lung cancer deaths among workers without asbestosis at 30-year latency.Lung cancer SMR among workers with asbestosis (n=2) was elevated at 30 year latency but was not statistically significant (7.46 [0.90-27.00], p-value unavailable). Lung cancer SMRs increase with increasing 18-year cumulative exposure groups: <50 f-y/ml=5.76 (0.70, 21.00); 50"99 f-y/ml= 5.51 (1.80"12.90); 100"149 f-y/ml= 9.60 (3.90"20.00); 150"199 f-y/ml= 6.87 (1.40"20.00); 200 and over f-y/ml= 9.06 (1.90"26.00). though no statistical difference between the groups.Lung cancer SMR among smokers (n=14): 6.44, and nonsmokers (n=3): 6.18, though no statistical difference between the two groups.Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 1.40 (p=0.58) comapred to those without asbestosis.Time-dependent Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 2.30 (p=0.15, 1-tailed p = 0.07) comapred to those without asbestosis. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
respiratory disease mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Respiratory disease SMR among workers without asbestosis (n=3) was elevated at 20 year latency (2.35 [0.50, 6.90], p-value unavailable), though not statistically significant.Respiratory disease SMR among workers with asbestosis (n=4) was significantly elevated at 20 year latency (13.80 [3.76, 55.00], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.Respiratory disease SMR among workers without asbestosis (n=2) was significantly elevated at 25 year latency (2.26 [0.30, 8.20], p-value unavailable), though not statistically significant.Respiratory disease SMR among workers with asbestosis (n=3) was significantly elevated at 25 year latency (19.30 [4.00, 56.00], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.No reported respiratory disease deaths among workers without asbestosis at 30-year latency.Respiratory disease SMR among workers with asbestosis (n=3) was significantly elevated at 30 year latency (5.20 [0.10, 29.00], p-value unavailable). Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Pneumoconiosis mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Pneumoconiosis SMR among workers without asbestosis (n=1) was elevated at 20 year latency (18.00 CI unavailable, p-value unavailable). Statistical significance unknown.Pneumoconiosis SMR among workers with asbestosis (n=2) at 20-year latency not reported.No reported pneumoconiosis disease deaths among workers without asbestosis at 25-year latency.Pneumoconiosis SMR among workers with asbestosis (n=1) at 25-year latency not reported.No reported pneumoconiosis disease deaths among workers without asbestosis at 30-year latency.Pneumoconiosis SMR among workers with asbestosis (n=1) at 30-year latency not reported. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural mesothelioma mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Pleural mesothelioma SMR among workers without asbestosis (n=3) at 20-year latency not reported.No reported pleural mesothelioma deaths with asbestosis at 20-year latency.Pleural mesothelioma SMR among workers without asbestosis (n=2) at 25-year latency not reported.No reported pleural mesothelioma deaths with asbestosisat 25-year latency.No reported pleural mesothelioma deaths without asbestosis at 30-year latency.Pleural mesothelioma SMR among workers with asbestosis (n=1) at 30-year latency not reported. Comments: While pleural mesothelioma is a reported outcome for Table 1, it did not seem to warrant a standalone data evaluation due to the lack of available findings (evidence in this data extraction form). Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Relevant outcomes of all cause mortality, non-malignant respiratory disease, and ischemic heart disease were assessed utilizing Canadian national mortality databases and death registries, with confirmation by pathology and autopsy reports for some analyses. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Asbestos exposed (n=535, production and maintenance workers) and control (n=205) male employees (total n=740) of an asbestos cement pipe manufacturing factory with a minimum of one year employment who had been hired prior to 1960.	estimated from previous sampling results and extensive job history data The estimated average cumulative exposure of the production workers was about 60 fiber-years/mL (chrysotile and crocidolite). The estimated mean cumulative exposure within the board shop, in which chrysotile was the sole asbestos type utilized, was 39 f-y/mL.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In the period 20 years from first exposure, the production workers had a standardized mortality ratio of 181 for all causes of death, 320 for non-malignant respiratory disease, and 58 for ischemic heart disease.	Low	3083612

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small opacities determined by a certified BIOSH B reader in according to 1971 ILO classification	Adults or general, Occupational; PESS included in study; Male; 181 former asbestos cement workers: (1982) Ontario. 161 had chest radiographs readily available.	impinger Air (personal level), Occupational Bseline exposure values between 1948-1954 ranged from 8-40 f/ml; between 1955-1961 ranged from 5.2-26 f/ml; between 1962-1970 ranged from 4-20 f/m;; and during the 1970s ranged from 0.2-0.5 f/ml (Finkelstein et al., 1982 000076). Majority crocidolite and chrysotile.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Cumulative exposure increased risk of small opacities:Greater than or equal to ILO 1/0 category: beta=0.0063 ($p<0.001$)Greater than or equal to ILO 1/1 category: beta=0.0068 ($p<0.002$)Greater than or equal to ILO 1/2 category: beta=0.017 ($p<0.001$)	Medium	709685
Pleural thickening determined by a certified BIOSH B reader in according to 1971 ILO classification	Adults or general, Occupational; PESS included in study; Male; 181 former asbestos cement workers: (1982) Ontario. 161 had chest radiographs readily available.	impinger Air (personal level), Occupational Bseline exposure values between 1948-1954 ranged from 8-40 f/ml; between 1955-1961 ranged from 5.2-26 f/ml; between 1962-1970 ranged from 4-20 f/m;; and during the 1970s ranged from 0.2-0.5 f/ml (Finkelstein et al., 1982 000076). Majority crocidolite and chrysotile.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Cumulative asbestos exposure was not a significant predictor in risk of pleural thickening Comments: QC was not completed for metrics other than Metrics 4 and 5 because the study does not have sufficient exposure information to be useful for dose-response analysis.	Medium	709685

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis Study Design: Cohort (Retrospective)	Occupational; PESS not included in study; Male; Workers that had been exposed to asbestos fibers for at least 1 year before 1961 and that were employed for 15 years or more.	Air impinger survey Air (area level), Occupational "An impinger survey was performed for the Company by insurance company hygienists in 1954 and in 1957. The Company began to do regular hygiene surveys in 1961, making use of the impinger and in October,1969, began quarterly sampling by the personal membrane filter technique [...] In summary, we adopted the personal membrane filter results of 1969/1970 as the baseline values for the various jobs." These baseline values were applied unchanged tothe years 1962 to 1970, were increased by a factor of 1.3 for the years 1955 to 1961, and by a factor of 2 for the years 1948 to 1954."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	See table 1 (the number of single data points to extract is greater than 20 data points).	Medium	76
Small irregular opacities, bilateral pleural thickening Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 181 asbestos-cement men workers.	nan Occupational "Cumulative exposures to asbestos were calculated using a model that extrapolated measurements made by the personal membrane filter, a method that came into use 21 years after the plant opened." Workers were assigned to 5 different exposure categories, each of which was 50 f-y/ml wide (except for last which was greater than or equal to 200 f-y/ml).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	The older men were at greater risk for the development of both asbestos-related radiology abnormalities (relative risk about 1.5), however not statistically significant or consistent across exposure categories (may have been due to smoking habits). Smokers were at a consistently higher risk for development of both asbestos-related radiology abnormalities (relative risk about 3, and statistically significant).	Medium	3083654

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small irregular opacities, bilateral pleural thickening Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 181 asbestos-cement men workers.	nan Occupational "Cumulative exposures to asbestos were calculated using a model that extrapolated measurements made by the personal membrane filter, a method that came into use 21 years after the plant opened." Workers were assigned to 5 different exposure categories, each of which was 50 f-y/ml wide (except for last which was greater than or equal to 200 f-y/ml).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	The older men were at greater risk for the development of both asbestos-related radiology abnormalities (relative risk about 1.5), however not statistically significant or consistent across exposure categories (may have been due to smoking habits). Smokers were at a consistently higher risk for development of both asbestos-related radiology abnormalities (relative risk about 3, and statistically significant).	Medium	3083654
FEV1. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The relationship between pulmonary function and exposures to talc containing anthophyllite and tremolite fibers in talc workers (n=93) versus potash miners (n=1,077) and versus synthetic textile workers (Table 10) was examined in this cross-sectional study.	NIOSH phase contrast counting technique Air (personal level), Air (area level) Fibers per mL > 5 um (area) Mean: 1.28; range: 0-3.77.;	FEV1 Coefficient (Standard error) per 100 fibers/ mL X years: -13.7 (3.4); (p<= 0.0001). Comments: Table 8 (multivariate regression, talc versus potash workers); additional results within stratified analysis of pulmonary function and symptom outcomes in talc compared with synthetic textile workers reported in Table 10 not extracted.		29531
FVC Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The relationship between pulmonary function and exposures to talc containing anthophyllite and tremolite fibers in talc workers (n=93) versus potash miners (n=1,077) and versus synthetic textile workers (Table 10) was examined in this cross-sectional study	NIOSH phase contrast counting technique Air (personal level), Air (area level) Fibers per mL > 5 um (area) Mean: 1.28; range: 0-3.77.;	FVC: Coefficient (Standard error) per 100 fibers/ mL X years: -12.7 (3.3); (p<= 0.001). Comments: Table 8 (multivariate regression, talc versus potash workers); additional results within stratified analysis of pulmonary function and symptom outcomes in talc versus synthetic textile workers reported in Table 10 not extracted.		29531

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV1% = FEV1/FVC X 100. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The relationship between pulmonary function and exposures to talc containing anthophyllite and tremolite fibers in talc workers (n=93) versus potash miners (n=1,077) and versus synthetic textile workers (Table 10) was examined in this cross-sectional study.	NIOSH phase contrast counting technique Air (personal level), Air (area level) Fibers per mL > 5 um (area) Mean: 1.28; range: 0-3.77;	FEV1% : Coefficient (Standard error) per 100 fibers/mL X years: -0.7 (1.8); not statistically significant. Comments: Table 8 (multivariate regression, talc versus potash workers); additional results within stratified analysis of pulmonary function and symptom outcomes in talc compared with synthetic textile workers reported in Table 10 not extracted.		29531
Vmax50 = maximal expiratory flow at 50% . Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The relationship between pulmonary function and exposures to talc containing anthophyllite and tremolite fibers in talc workers (n=93) versus potash miners (n=1,077) and versus synthetic textile workers (Table 10) was examined in this cross-sectional study.	NIOSH phase contrast counting technique Air (personal level), Air (area level) Fibers per mL > 5 um (area) Mean: 1.28; range: 0-3.77;	Vmax50: Coefficient (Standard error) per 100 fibers/mL X years: -7.6 (7.9); not statistically significant. Comments: Table 8 (multivariate regression, talc versus potash workers); additional results within stratified analysis of pulmonary function and symptom outcomes in talc versus synthetic textile workers reported in Table 10 not extracted.		29531
Vmax75 = maximal expiratory flow at 75% . Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The relationship between pulmonary function and exposures to talc containing anthophyllite and tremolite fibers in talc workers (n=93) versus potash miners (n=1,077) and versus synthetic textile workers (Table 10) was examined in this cross-sectional study.	NIOSH phase contrast counting technique Air (personal level), Air (area level) Fibers per mL > 5 um (area) Mean: 1.28; range: 0-3.77;	Vmax75: Coefficient (Standard error) per 100 fibers/mL X years: -13.8 (8.3); not statistically significant. Comments: Table 8 (multivariate regression, talc versus potash workers); additional results within stratified analysis of pulmonary function and symptom outcomes in talc versus synthetic textile workers reported in Table 10 not extracted.		29531

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098

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Epidemiology Extraction Table: Lung/Respiratory					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
"Prevalence of pulmonary impairment in workers of asbestos products manufacturing units" Study Design: Case-Control	Occupational; PESS may not included in study; Other, Not specified; "104 workers including officials (not directly exposed to asbestos dust)" that worked at UP Asbestos Pvt. Ltd, India.	PCM Air (area level), Air (indoor), Air (outdoor) "A general survey of inside and outside the plant area in the factory was conducted to choose the sampling sites on visual basis. The milling, mixing and sheet locations inside the plant area, and the fibre godowns, time-office and main gate locations outside the plant area were selected for the sampling of airborne asbestos dust."; Asbestos - Not specified: 1332-21-4	Table 1 " Prevalence of pulmonary function impairment in workers of asbestos products manufacturing units."Non-smokers (64): Obstruction: 12.5% , Restriction: 6.25% , Mixed 6.25% Smokers (39): Obstruction: 41% , Restriction: 15.3% , Mixed 10.20% Ex-smokers (1): Obstruction: 23% , Restriction: 9.6% , Mixed 7.6%	Low	3080098
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) compared to all British males born in 1945 (analyses restricted to males)	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Mesothelioma SMR proportional to mean lung burden:0 - : 210.025 - million asbestos fibers longer than 5 um per dry gram: 830.05 - million asbestos fibers longer than 5 um per dry gram: 1930.2 - million asbestos fibers longer than 5 um per dry gram: 6330.5 - million asbestos fibers longer than 5 um per dry gram: 1501>=1.0 - million asbestos fibers longer than 5 um per dry gram: 3137		3077660
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) compared to all British males born in 1945 (analyses restricted to males)	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Mesothelioma SMR proportional to mean lung burden:0 - : 210.025 - million asbestos fibers longer than 5 um per dry gram: 830.05 - million asbestos fibers longer than 5 um per dry gram: 1930.2 - million asbestos fibers longer than 5 um per dry gram: 6330.5 - million asbestos fibers longer than 5 um per dry gram: 1501>=1.0 - million asbestos fibers longer than 5 um per dry gram: 3137		3077660

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary fibrosis (asbestosis) score assessed by 3 pathologists in necropsy samples and graded according to criteria established by a joint National Institute for Occupational Safety and Health (NIOSH) and College of American Pathologists (CAP) Committee. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; Green et al., 1997 (HERO ID 7837) examined the association between estimated lifetime cumulative and total lung burden of asbestos at death with pulmonary fibrosis (asbestosis) within a necropsy population (n=54) of former workers working at least one month (males) or six months (females) between 01 January 1940 and 31 December 1975 in a chrysotile asbestos textile plant in South Carolina and age at death, sex, hospital, and year of death matched controls. Asbestos worker age at death for males, median (quartiles): 56.0 (49.0-61.0), females: 57.0 (55.0-63.5); Control age at death for males, median (quartiles): 59.0 (49.3-62.0), females: 62.5 (59.3-65.0).	estimated from measured dust concentrations estimated Lifetime cumulative exposure (fibers > 5 μm/mL3 x years employed = fiber-years): median (quartiles): 30.2 (5.8-108.6); mean (quartiles): 4.7 (3.2-7.4). Dominant fiber type was chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5, Anthophyllite: 17068-78-9	Green et al., 1997 (HERO ID 7837) pulmonary fibrosis score in asbestos textile workers correlated with both estimated cumulative lifetime exposure to asbestos (r = 0.60, P< 0.01, Figure 2) and the concentration of asbestos fibers in the lung (r = 0.62, P<0.0001, Figure 3.A). Results in Table 5 indicated significantly (p<0.001) greater median pulmonary fibrosis scores in asbestos workers than in the non-exposed control workers for all quartiles of exposure except quartile 1. There was a non-significant trend toward greater fibrosis scores with increasing asbestos fiber burdens in the control population and the mean number of asbestos bodies on tissue sections was also strongly associated with grade of lung fibrosis (P< 0.001). No relationship between non-asbestos fibers in the lung and fibrosis was found.	Medium	7837

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer, ascertainment method not described Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; Green et al., 1997 (HERO ID 7837) examined the association between estimated lifetime cumulative and total lung burden of asbestos at death with pulmonary fibrosis (asbestosis) within a necropsy population (n=54) of former workers working at least one month (males) or six months (females) between 01 January 1940 and 31 December 1975 in a chrysotile asbestos textile plant in South Carolina and age at death, sex, hospital, and year of death matched controls. Asbestos worker age at death for males, median (quartiles): 56.0 (49.0-61.0), females: 57.0 (55.0-63.5); Control age at death for males, median (quartiles): 59.0 (49.3-62.0), females: 62.5 (59.3-65.0).	estimated from measured dust concentrations estimated Lifetime cumulative exposure (fibers > 5 μm/mL3 x years employed = fiber-years): median (quartiles): 30.2 (5.8-108.6); mean (quartiles): 4.7 (3.2-7.4). Dominant fiber type was chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5, Anthophyllite: 17068-78-9	Green et al., 1997 (HERO ID 7837) found that lifetime cumulative exposure to asbestos was significantly higher in workers with lung cancer (n=10, lifetime cumulative exposure geometric mean: 94.6 fiber-years) than workers without lung cancer (n=43, lifetime cumulative exposure geometric mean: 21.3 fiber-years), p=0.03.	Medium	7837
Asbestosis mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; HERO ID 3081241 includes former workers working for at least 1 month between 01 January 1940 and 31 December 1975 in a chrysotile asbestos textile plant in South Carolina and followed through 31 December 1990 (n = 1247 white male workers, n = 546 non-white men, n = 1229 white women, n = 19 non-white women). HERO ID 709498 includes follow-up through 2001 of a cohort of a total of 3,072 workers. This outcome was not assessed in HERO ID 7837.	estimated from measured dust concentrations estimated Lifetime cumulative exposure in HERO ID 709498 median of 5.5 (range: 0.1-699.8) fiber-years/mL. Equivalent exposure for HERO ID 3081241 not reported.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5, Anthophyllite: 17068-78-9	HERO ID 3081241 found a statistically significant, non-linear (on a multiplicative scale) exposure-response relationship between cumulative exposure and asbestosis mortality, with an excess lifetime risk for white men exposed for 45 years at 0.1 fibers/mL of 2/1000 (similar estimates for other groups and exposure levels can be found in Table 5). HERO ID 709498 also found that cumulative exposure was positively and significantly associated with asbestosis mortality in power models.	Medium	7837

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory cancer mortality (ICD-8 160-163) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 153 (95% CI: 73-280)10-yr Latency (SMR): 130 (95% CI: 48-284) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Bronchitis, emphysema, asthma mortality (ICD-8 490-493) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 201 (95% CI: 55-514)10-yr Latency (SMR): 227 (95% CI: 47-663) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Respiratory tract tumors (ICD-7 160-164) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 213 (95% CI: 127-346)10-yr Latency (SMR): 195 (95% CI: 97-349) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Nose and sinus tumors (ICD-7 160) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 448 (95% CI: 11-2500)10-yr Latency (SMR): 803 (95% CI: 20-4470) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Larynx tumors (ICD-7 161) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 391 (95% CI: 81-114)10-yr Latency (SMR): 549 (95% CI: 113-1610) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Lung and pluera tumors (ICD-7 162-164) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 186 (95% CI: 99-318)10-yr Latency (SMR): 141 (95% CI: 57-290) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Laryngeal cancer ascertained by the following ICD-10 classification codes: C32.0-C32.3 and C32.8-C32.9. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Male and female participants from five separate INHANCE case-control studies with available occupational histories from 1989 to 2007: (2020), Western Europe, Latin America, France, and Germany. 2256 cases and 7857 controls.	PCM electron microscopy for data from Germany (Peters et al., 2016 3531308) Air (area level), Occupational Individual exposure measurements were assigned using a SYN-JEM. Median cumulative exposure was 0.98 f/ml-years and 0.28 f/ml-years in male and female cases, respectively. In controls, it was 0.56 f/ml-years and 0.35 f/ml-years in males and females, respectively. (see Table 2);	Adjusted odds ratios for laryngeal cancer per increasing cumulative exposure (Model 2) in males:<50th percentile of exposure vs. no exposure = 1.1 (0.91-1.3);50th-75th percentile of exposure vs. no exposure = 1.1 (0.93-1.13);75th-90th percentile of exposure vs. no exposure = 1.1 (0.88-1.3);>90th percentile of exposure vs. no exposure = 1.3 (1.0-1.6);p test for trend = 0.04.Adjusted odds ratios for laryngeal cancer per increasing cumulative exposure (Model 2) in females:<50th percentile of exposure vs. no exposure = 1.3 (0.66-2.5);>=50th percentile of exposure vs. no exposure = 0.83 (0.38-1.8). Comments: Tables 3 and 4		6775698
Mesothelioma: incidence and mortalityMortality: all-cause, lung cancer, other cause-specificCancer incidence: all neoplasms, lung/respiratory cancers, other cause-specific Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Children (2-18y); PESS included in study; Female, Male; These studies analyzed a cohort of nearly 5,000 individuals who had lived in Wittenoom, Australia for ≥1 month from 1943-1993. Asbestos workers were excluded. Cohort size varied slightly with updates over time, including 4,768 participants (2608 women, 2160 men) at the end of 2000, and about 2,560 individuals exposed as children <15y in 2007 (Reid et al. 2008, 709466; Reid et al 2007, 709501; Reid et al 2012, 2088306).	TEM, PCM SEM, extrapolation based on dust exposure history Air (personal level), Air (area level) In the most recent study geometric mean (IQR) for estimated cumulative exposure was 3.02 (1.4-7.70) f/mL-years in persons who had been exposed as children, and 2.05 (0.90-5.75) f/mL-years in persons exposed only as adults (Reid et al. 2018, 6869529).; Asbestos - Crocidolite (riebeckite): 12001-28-4	For mesothelioma, the HR (95%) CI per 10 f/mL-years increase in exposure was 3.10 (2.11 to 4.53) in the most recent paper (Reid et al. 2018, 6869529). Hazard ratios for lung cancer reported in several papers were not significant. SMRs and/or SIRs were significant for mesothelioma, as well as a few additional outcomes, including "signs/symptoms ill-defined" mortality among women exposed in childhood, leukemia incidence and nervous system mortality in men exposed as children, and pneumoconiosis mortality in women (based on n=2 cases). Comments: This large cohort of residentially but not occupationally exposed individuals included 119 cases of mesothelioma by 2014. Analyses examined gender and age at exposure differences. There are concerns regarding exposure measurement error, particularly prior to 1966 when mining ceased: a single value based on expert judgment was extrapolated backward for the entire duration as no fiber measures had been taken. Exposure measurement error may be differential for mesothelioma cases who had detailed residential and work histories, while duration of residence was estimated from limited public records for half of the remaining cohort. There was about 20% loss to follow-up. Several SMRs/SIRs reached significance using a censoring method that might over-estimate associations, but not the alternative approach.	Medium	709618

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FVC Study Design: Case Report	Occupational; PESS not included in study; Male; Twenty-three male workers exposed to chrysotile asbestos at Utah Technical College in Orem, Utah	Air (area level) floor dust The measurements were not taken during exposure of study participants, but after the job closure and during simulated activities that represented exposure scenarios.; Asbestos - Chrysotile (serpentine): 12001-29-5	At 1.5 months: 5.19, SD 0.75. At 8 months: 5.24, SD:0.74 [units: liters]	Medium	3084436
FEV1 Study Design: Case Report	Occupational; PESS not included in study; Male; Twenty-three male workers exposed to chrysotile asbestos at Utah Technical College in Orem, Utah	Air (area level) floor dust The measurements were not taken during exposure of study participants, but after the job closure and during simulated activities that represented exposure scenarios.; Asbestos - Chrysotile (serpentine): 12001-29-5	At 1.5 months: 3.95, SD: 0.51. At 8 months: 3.95, SD:0.68 [units: liters]	Medium	3084436
FEF(25-75%) Study Design: Case Report	Occupational; PESS not included in study; Male; Twenty-three male workers exposed to chrysotile asbestos at Utah Technical College in Orem, Utah	Air (area level) floor dust The measurements were not taken during exposure of study participants, but after the job closure and during simulated activities that represented exposure scenarios.; Asbestos - Chrysotile (serpentine): 12001-29-5	At 1.5 months: 3.64, SD: 1.45. At 8 months: 3.42, SD: 1.28 [units: liters per second]	Medium	3084436
FRC Study Design: Case Report	Occupational; PESS not included in study; Male; Twenty-three male workers exposed to chrysotile asbestos at Utah Technical College in Orem, Utah	Air (area level) floor dust The measurements were not taken during exposure of study participants, but after the job closure and during simulated activities that represented exposure scenarios.; Asbestos - Chrysotile (serpentine): 12001-29-5	At 1.5 months: 3.59, SD: 1.02. At 8 months: 3.14, SD: 0.74 [units: liters]	Medium	3084436

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
asbestosis Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 776 workers in Shanghai, China, 1958-1982, age not reported.	PCM gravimetry Air (personal level), Air (area level), Air (indoor) Mean fiber concentrations across all worksites ranged from 0.39-63.80 f/mL. The sample of 776 workers was distributed across categories of cumulative exposure (f/mL)year) as follows: 0-99 n=385, 49.6% ; 100-199 n=181, 23.3% ; 200-399 n=113, 14.5% ; 400-599 n=41, x=5.2% ; 600-799 n=34, 4.4% ; and 800+ n=22; 2.8% .; Asbestos - Chrysotile (serpentine): 12001-29-5	Regression model found a linear dose-response relationship as follows: likelihood of asbestosis = -9.7826 + 3.871*log-transformed cumulative asbestos exposure Comments: Limitations include the following. (1) Cumulative exposure was presented only in categories; the mean or a similar central tendency variable was not provided, a limitation for interpreting the regression results. (2) Exposure was estimated based on historical dust measures converted to fiber estimates using multiple paired samples for 18 job activity-workshop locations. However, protocols were not described either for the concurrent dust-fiber sample collection, or for historical dust sampling. (3) The study was not able to characterize prior exposure to asbestos for an unknown number of employees limits the validity of exposure estimates. Sensitivity analyses excluding these employees were not conducted.	Medium	3082611
Evidence of small opacities (0/1) measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Observed relationship between increasing cumulative exposure to asbestos and small opacities (statistical significance not tested).	Medium	2223821
Evidence of small opacities (0/1) measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Observed relationship between increasing cumulative exposure to asbestos and small opacities (statistical significance not tested).	Medium	2223821

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All causes mortality with evidence of pleural (observed/ expected) SMR measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed for all cause mortality.	Medium	2223821
Respiratory malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.31;25-49 mppcf-years = 2.00, $p < 0.05$;50-99 mppcf-years = 1.81, $p < 0.05$;>=100 mppcf-years = 2.31, $p < 0.01$. Comments: Tables 8 and 9	Medium	281
Pneumoconiosis mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung function (spirometry): FVC, % predicted FVC, FEV1, % predicted FEV1, FEV1/FVC ratio. Other asbestosis symptoms: finger clubbing. basilar rales (crackling breath sounds), dyspnea, small opacities in lungs. Asbestosis was defined as 3 or more of these 5 symptoms. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 50 men working at an amosite insulation plant in East Texas in 1971, who had been employed for at least one year.	PCM Air (personal level) Duration of employment categories (-4, 5-9, 10-14 and >15 years) were used to assess how exposure was associated with health outcomes at this amosite asbestos insulation plant. The highest and lowest mean fiber concentrations (fibers/cc) reported for different areas of the plant were: 1967 = 163.5 for milling and 2.5 for curing; 1970 = 13.6 for miscellaneous and 36.2 for milling; 1971 = 14.4 for curing and 74.4 for milling in 1971.;	The study was purely descriptive with no statistical testing reported. Asbestosis (possible) was identified in 7 of the 18 workers employed for 10 or more years. Mean lung function measures tended to worsen with increasing employment duration (1-4, 5-9, 10-14 and >15 years), with an uptick in workers employed >15 years. Among white workers, mean FVC% over these categories were: 1-4 years = 97.5% , 86.0% , 82.0% , and 85.4% . Mean FEV1% over these categories were: 102.0% , 84.0% , 75.4% and 83.3% . There were too few black workers to meaningfully assess trends in means. Potential confounding by age and smoking, as well as HWE bias, are concerns.		3083873
Lung function (spirometry): FVC, % predicted FVC, FEV1, % predicted FEV1, FEV1/FVC ratio. Other asbestosis symptoms: finger clubbing. basilar rales (crackling breath sounds), dyspnea, small opacities in lungs. Asbestosis was defined as 3 or more of these 5 symptoms. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 50 men working at an amosite insulation plant in East Texas in 1971, who had been employed for at least one year.	PCM Air (personal level) Duration of employment categories (-4, 5-9, 10-14 and >15 years) were used to assess how exposure was associated with health outcomes at this amosite asbestos insulation plant. The highest and lowest mean fiber concentrations (fibers/cc) reported for different areas of the plant were: 1967 = 163.5 for milling and 2.5 for curing; 1970 = 13.6 for miscellaneous and 36.2 for milling; 1971 = 14.4 for curing and 74.4 for milling in 1971.;	The study was purely descriptive with no statistical testing reported. Asbestosis (possible) was identified in 7 of the 18 workers employed for 10 or more years. Mean lung function measures tended to worsen with increasing employment duration (1-4, 5-9, 10-14 and >15 years), with an uptick in workers employed >15 years. Among white workers, mean FVC% over these categories were: 1-4 years = 97.5% , 86.0% , 82.0% , and 85.4% . Mean FEV1% over these categories were: 102.0% , 84.0% , 75.4% and 83.3% . There were too few black workers to meaningfully assess trends in means. Potential confounding by age and smoking, as well as HWE bias, are concerns.		3083873
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification pulmonary concentration: 0.1-0.99 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 1.6 (95% CI: 0.8-3.2) NSWidespread plaques: 2.7 (1.2-6.2) p-value < 0.05; Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification > 1.0 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 2.8 (95% CI 1.0-8.2) NSWidespread plaques: 8.1 (2.7-24) p-value < 0.001 Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification 0.1-0.49 million f/g of Anthophillite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 1.7 ; Widespread plaques: 1.5For Crocidolite/amosite exposure: Moderate plaques: 1.5; Widespread plaques: 2.8 (p-value <0.01) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification >=0.5 million f/g of anthophyllite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 2.2 (p <0.1) ; Widespread plaques: 1.8For Crocidolite/amosite exposure: Moderate plaques: 2.9; Widespread plaques: 7.7 (p-value <0.001) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification pulmonary concentration: 0.1-0.99 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 1.6 (95% CI: 0.8-3.2) NSWidespread plaques: 2.7 (1.2-6.2) p-value < 0.05; Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification > 1.0 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 2.8 (95% CI 1.0-8.2) NSWidespread plaques: 8.1 (2.7-24) p-value < 0.001 Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification 0.1-0.49 million f/g of Anthophillite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 1.7 ; Widespread plaques: 1.5For Crocidolite/amosite exposure: Moderate plaques: 1.5; Widespread plaques: 2.8 (p-value <0.01) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification >=0.5 million f/g of anthophyllite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 2.2 (p <0.1) ; Widespread plaques: 1.8For Crocidolite/amosite exposure: Moderate plaques: 2.9; Widespread plaques: 7.7 (p-value <0.001) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
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Epidemiology Extraction Table: Lung/Respiratory

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Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification 0.1-0.49 million f/g of Anthophillite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 1.7 ; Widespread plaques: 1.5For Crocidolite/amosite exposure: Moderate plaques: 1.5; Widespread plaques: 2.8 (p-value <0.01) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification >=0.5 million f/g of anthophyllite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 2.2 (p <0.1) ; Widespread plaques: 1.8For Crocidolite/amosite exposure: Moderate plaques: 2.9; Widespread plaques: 7.7 (p-value <0.001) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification pulmonary concentration: 0.1-0.99 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 1.6 (95% CI: 0.8-3.2) NSWidespread plaques: 2.7 (1.2-6.2) p-value < 0.05; Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification > 1.0 million fibers/g; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Moderate plaques: 2.8 (95% CI 1.0-8.2) NSWidespread plaques: 8.1 (2.7-24) p-value < 0.001 Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification 0.1-0.49 million f/g of Anthophillite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 1.7 ; Widespread plaques: 1.5For Crocidolite/amosite exposure: Moderate plaques: 1.5; Widespread plaques: 2.8 (p-value <0.01) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general, Occupational; PESS may not included in study; Male; 300 unexpectedly deceased males from Helsinki, 1991-92, 35-69 years	Electron microscopy Lung tissue sample, job classification >=0.5 million f/g of anthophyllite and crocidolite/ amosite; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	OR Adjusted for ageFor Anthophillite exposure: Moderate plaques: 2.2 (p <0.1) ; Widespread plaques: 1.8For Crocidolite/amosite exposure: Moderate plaques: 2.9; Widespread plaques: 7.7 (p-value <0.001) Comments: The < 0.1 million fibers/g is used as the reference group for ORs	Medium	3081814
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Probable pleural plaque: 960 +/- 104 asbestos bodies Comments: There were some qualitative statements made, such as "the cases with clear pleural plaques on chest x-ray film had many more asbestos bodies than unclear cases" (Kishimoto et al., 1989).	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaques: 32,560 +/-31,346 asbestos bodies	Low	3082790

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaque with calcifications: 42,841 +/- 10,981	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Probable pleural plaque: 960 +/- 104 asbestos bodies Comments: There were some qualitative statements made, such as "the cases with clear pleural plaques on chest x-ray film had many more asbestos bodies than unclear cases" (Kishimoto et al., 1989).	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaques: 32,560 +/-31,346 asbestos bodies	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaque with calcifications: 42,841 +/- 10,981	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Probable pleural plaque: 960 +/- 104 asbestos bodies Comments: There were some qualitative statements made, such as "the cases with clear pleural plaques on chest x-ray film had many more asbestos bodies than unclear cases" (Kishimoto et al., 1989).	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaques: 32,560 +/-31,346 asbestos bodies	Low	3082790
Pleural plaques Study Design: Cross-Sectional	Adults or general; PESS included in study; Female, Male; 400 individuals autopsied in Kure Kyosai Hospital (Japan), 1984-86,	Light microscopy of lung samples Asbestos bodies in lung tissue >500 asbestos bodies per 5g sample; Asbestos - Not specified: 1332-21-4	Definite pleural plaque with calcifications: 42,841 +/- 10,981	Low	3082790

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Lung cancer Deaths Observed: Group 1: 12; Group 2: 5; Group 3: 2; Group 4: 6; Group 5: 2Table III Total Lung cancer Deaths Expected: Group 1: 1.18; Group 2: 1.57; Group 3: 1.35; Group 4: 6.41; Group 5: 0.24		115
Diseases of the respiratory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Disease of respiratory system Deaths Observed: Group 1: 14; Group 2: 3; Group 3: 1; Group 4: 8; Group 5: 1Table III Total Disease of respiratory system Deaths Expected: Group 1: 2.37; Group 2: 2.28; Group 3: 1.43; Group 4:8.59; Group 5: 0.55		115
FEV1: Forced Expiratory Volume; FVC: Forced Vital Capacity; TLC: Total Lung Capacity Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	Regression Coefficient (+/- SE): FEV1 = -0.121 (0.039); FVC = -0.106 (0.035); TLC = -0.006 (0.037)		115
FEV1: Forced Expiratory Volume; FVC: Forced Vital Capacity; TLC: Total Lung Capacity Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	Regression Coefficient (+/- SE): FEV1 = -0.121 (0.039); FVC = -0.106 (0.035); TLC = -0.006 (0.037)		115

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Epidemiology Extraction Table: Lung/Respiratory					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FEV1: Forced Expiratory Volume; FVC: Forced Vital Capacity; TLC: Total Lung Capacity Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	Regression Coefficient (+/- SE): FEV1 = -0.121 (0.039); FVC = -0.106 (0.035); TLC = -0.006 (0.037)		115
crepitations, possible asbestosis, certified asbestosis Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	The relationship between exposure and 1% prevalence of crepitations, possible asbestosis and certified asbestosis were detailed in the text and Figure 4 of Berry et al., 1979: Figure 4 shows the observed and fitted relationships between crepitations, possible asbestosis and certified asbestosis for men first employed after 1950. The exposures giving 1% prevalences were 37, 46, and 63 f-year/ cm^ 3 for crepitations, possible asbestosis and certified asbestosis, respectively.		115
crepitations, possible asbestosis, certified asbestosis Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	The relationship between exposure and 1% prevalence of crepitations, possible asbestosis and certified asbestosis were detailed in the text and Figure 4 of Berry et al., 1979: Figure 4 shows the observed and fitted relationships between crepitations, possible asbestosis and certified asbestosis for men first employed after 1950. The exposures giving 1% prevalences were 37, 46, and 63 f-year/ cm^ 3 for crepitations, possible asbestosis and certified asbestosis, respectively.		115
crepitations, possible asbestosis, certified asbestosis Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Berry et al., 1979 included n=379 men who had worked at the same asbestos textile factory in England for at least 10 years and extended follow-up for 6.5 years beyond that of Knox et al., 1968.	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels in Berry et al., 1979 were reported in Table 1 for various years between 1936 and 1972 and ranged from 2.9 fibers/cm^ 3 in 1972 to 14.5 fibers/cm^ 3 in 1941.;	The relationship between exposure and 1% prevalence of crepitations, possible asbestosis and certified asbestosis were detailed in the text and Figure 4 of Berry et al., 1979: Figure 4 shows the observed and fitted relationships between crepitations, possible asbestosis and certified asbestosis for men first employed after 1950. The exposures giving 1% prevalences were 37, 46, and 63 f-year/ cm^ 3 for crepitations, possible asbestosis and certified asbestosis, respectively.		115

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques confirmed by UICC/Cincinnati classification via chest radiographs.	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos cement factory: (1980), Belgium, n=1973.	fiber membrane method; personal exposures Air (area level), Occupational Fiber measurements ranged from 0-3200 fiber-years between 1963-1977. Majority chrysotile, some crocidolite and amosite.;	A dose-response relationship was generally observed across all age groups for s-t-u small lung opacities (Table 2 , p=0.001), pleural adhesions (Table 3, p=0.002), and pleural thickening (Table 4, p=0.01). (Lacquet et al., 1980 3084226)		3084226
Asbestosis confirmed by irregular small lung opacities, as well as presence of at least two abnormalities including il-defined outline of heart and/ or diaphragm, clubbed fingers, crackling rales, or vital capacity <76% of predicted value.	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos cement factory: (1980), Belgium, n=1973.	fiber membrane method; personal exposures Air (area level), Occupational Fiber measurements ranged from 0-3200 fiber-years between 1963-1977. Majority chrysotile, some crocidolite and amosite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	A dose-response relationship was generally observed between cases of asbestosis and degree of asbestos exposure. Count of new cases were 1, 7, 8, 10, and 3 for ranges of 100 - 199, 200 - 399, 400 - 799, 800 - 1599, and 1600 - 3200, respectively (p<10^ -6).	Medium	3084226
Radiologic lung changes: localized or diffuse pleural thickening, parenchymal changes. Respiratory symptoms and lung function measures were also examined in Larson et al, 1005289: restrictive spirometry, dyspnea, chronic bronchitis, excess cough. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; These studies examined radiographic lung changes and respiratory symptoms in workers at a Libby, MT mine containing asbestos-contaminated vermiculite. In Larson et al 1005289, participants self-selected into a voluntary ATSDR community health screening program.	PCM Air (personal level), Air (area level) Among participants in the Larson et al, 1005289 cohort, the median cumulative fiber exposure was 3.6 fiber/cc-years.; Asbestos- Libby amphibole: 1318-09-8, Winchite: 12425-92-2-Asbestos-Richterite: 17068-76-7, Tremolite: 14567-73-8, Actinolite: 12172-67-7	In Larson et al, 1005289 the duration since first exposure was longer than in previous analyses of Libby vermiculite mine workers, but self-selection bias is a major concern. Few associations were statistically significant. The exceptions were associations with the 3rd CFE quartile for localized pleural thickening [ORs (95% CI)] for increasing quartiles vs Q1= 1.9 (0.9-3.9), 2.3 (1.1-4.9), 1.8 (0.8-4.0) and chronic bronchitis [1.0 (0.2-4.0), 3.8 (1.2-2.4), 2.9 (0.8-10.4). The weaker associations observed for the highest quartile of exposure might be due in part to self-selection bias, as the most highly exposed workers may have been less likely to participate in the screening due to previous diagnoses, morbidity, or mortality. Comments: As the authors acknowledge with respect to self-selection bias in the discussion: "Thus, a variation of the healthy worker survivor effect may have resulted in workers with lower exposures remaining healthy enough to participate in the screening program. Also, workers with greater cumulative exposure may have already been diagnosed with asbestos-related health outcomes and opted not to participate. In particular, for LPT, this source of selection bias may have resulted in a lower prevalence at high-CFE levels."	Medium	1005289

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Progression of radiologic lung changes (presence or absence of progression) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 83 male Libby vermiculite mine workers with circumscribed pleural plaques who had serial radiographs that were taken at least 4 years apart available in a hospital archive (convenience sample). The authors did not explicitly specify that the sample was exclusively male, but the worker population was 96% male.	PCM Samples prior to 1974 used methods such as midget impingers Air (personal level), Air (area level) Median cumulative fiber exposure (CFE) in fiber/mL years was 44.1 in the entire sample, 76.5 in subjects with any pleural calcification, and 317.8 in subjects with diffuse pleural thickening.; Asbestos-Libby amphibole: 1318-09-8, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No statistically significant association was found between CFE and odds of progression in lung changes. However, the study provided important insights on the timing of progressive changes in asbestos-related lung abnormalities, from none to mild, moderate, and severe. Comments: It is uncertain whether the sample is representative of the target population (i.e., no selection bias).	Medium	709456

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
small opacities 1/0 or more Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Liddel et al:Male employees of Thetford Mines born between 1891-1920 who were aged 60+ in November 1966 or at termination of their last job (if earlier) and had 20+ years of experience at the facility.Cordier et al: Male employees of Thetford Mines who began employment between 1954-1969 and had 5+ years of cumulative exposure.	Air (area level) Liddel et al:Chrysotile asbestos, average fiber concentration (f/mL)Cordier et al: Chrysotile asbestos, cumulative exposure index (f/cc*yrs); Asbestos - Chrysotile (serpentine): 12001-29-5	Liddel et al:Prevalence of radiographic changes by gross service and avg fiber concentration (Table 2) with X^ 2 tests for difference (Table 3)—————Gross service >=40 years————————Small opacities 1/0 or more (X^ 2: 6.50)Avg fiber concentration <=10 f/mL: 23.7% Avg fiber concentration 10-<=25 f/mL: 14.0% Avg fiber concentration 25-<=75 f/mL: 31.5% Avg fiber concentration >=75 f/mL: 35.6% ——Pleural changes (X^ 2: 0.63)Avg fiber concentration <=10 f/mL: 30.7% Avg fiber concentration 10-<=25 f/mL: 34.0% Avg fiber concentration 25-<=75 f/mL: 38.9% Avg fiber concentration >=75 f/mL: 38.3% ——Both of above (X^ 2: 5.23)Avg fiber concentration <=10 f/mL: 13.8% Avg fiber concentration 10-<=25 f/mL: 8.2% Avg fiber concentration 25-<=75 f/mL: 18.5% Avg fiber concentration >=75 f/mL: 22.7% ——Small opacities 2/1 or more (X^ 2: 7.56)Avg fiber concentration <=10 f/mL: 5.0% Avg fiber concentration 10-<=25 f/mL: 3.8% Avg fiber concentration 25-<=75 f/mL: 7.85% Avg fiber concentration >=75 f/mL: 14.0% ——Pleural thickening grade 2 or more (X^ 2: 1.36)Avg fiber concentration <=10 f/mL: 2.0% Avg fiber concentration 10-<=25 f/mL: 6.8% Avg fiber concentration 25-<=75 f/mL: 1.51% Avg fiber concentration >=75 f/mL: 1.3% ————————Gross service 20, <40 years————————Small opacities 1/0 or more (X^ 2: 6.17)Avg fiber concentration <=25 f/mL: 16.0% Avg fiber concentration >25 f/mL: 33.5% ——Pleural changes (X^ 2: 0.17)Avg fiber concentration <=25 f/mL: 23.7% Avg fiber concentration >25 f/mL: 26.7% ——Both of above (X^ 2: 0.38)Avg fiber concentration <=25 f/mL: 10.0% Avg fiber concentration >25 f/mL: 13.5% ——Small opacities 2/1 or more (X^ 2: 0.29)Avg fiber concentration <=25 f/mL: 3.8% Avg fiber concentration >25 f/mL: 6.0% ——Pleural thickening grade 2 or more (X^ 2: 0.15)Avg fiber concentration <=25 f/mL: 4.2% Avg fiber concentration >25 f/mL: 5.4% Prevalence of radiographic changes by exposure accumulated to age 45 (Table 4)——Small opacities 1/0 or moreAccumulated exposure <150 f/mL*yrs: 22.4% Accumulated exposure 150-<300 f/mL*yrs: 15.2% Accumulated exposure 300-<600 f/mL*yrs: 20.3% Accumulated exposure 600-<1200 f/mL*yrs: 21.1% Accumulated exposure 1200-<2400 f/mL*yrs: 33.0% Accumulated exposure >=2400 f/mL*yrs: 36.9% X^ 2 for trend (1 df): 11.55——Pleural changesAccumulated exposure <150 f/mL*yrs: 29.0% Accumulated exposure 150-<300 f/mL*yrs: 27.3% Accumulated exposure 300-<600 f/mL*yrs: 30.5%	Medium	3083980

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
small opacities 1/0 or more Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Liddel et al:Male employees of Thetford Mines born between 1891-1920 who were aged 60+ in November 1966 or at termination of their last job (if earlier) and had 20+ years of experience at the facility.Cordier et al: Male employees of Thetford Mines who began employment between 1954-1969 and had 5+ years of cumulative exposure.	Air (area level) Liddel et al:Chrysotile asbestos, average fiber concentration (f/mL)Cordier et al: Chrysotile asbestos, cumulative exposure index (f/cc*yrs); Asbestos - Chrysotile (serpentine): 12001-29-5	Liddel et al:Prevalence of radiographic changes by gross service and avg fiber concentration (Table 2) with X^ 2 tests for difference (Table 3)————————Gross service >=40 years————————Small opacities 1/0 or more (X^ 2: 6.50)Avg fiber concentration <=10 f/mL: 23.7% Avg fiber concentration 10-<=25 f/mL: 14.0% Avg fiber concentration 25-<=75 f/mL: 31.5% Avg fiber concentration >=75 f/mL: 35.6% ——Pleural changes (X^ 2: 0.63)Avg fiber concentration <=10 f/mL: 30.7% Avg fiber concentration 10-<=25 f/mL: 34.0% Avg fiber concentration 25-<=75 f/mL: 38.9% Avg fiber concentration >=75 f/mL: 38.3% ——Both of above (X^ 2: 5.23)Avg fiber concentration <=10 f/mL: 13.8% Avg fiber concentration 10-<=25 f/mL: 8.2% Avg fiber concentration 25-<=75 f/mL: 18.5% Avg fiber concentration >=75 f/mL: 22.7% ——Small opacities 2/1 or more (X^ 2: 7.56)Avg fiber concentration <=10 f/mL: 5.0% Avg fiber concentration 10-<=25 f/mL: 3.8% Avg fiber concentration 25-<=75 f/mL: 7.85% Avg fiber concentration >=75 f/mL: 14.0% ——Pleural thickening grade 2 or more (X^ 2: 1.36)Avg fiber concentration <=10 f/mL: 2.0% Avg fiber concentration 10-<=25 f/mL: 6.8% Avg fiber concentration 25-<=75 f/mL: 1.51% Avg fiber concentration >=75 f/mL: 1.3% ————————Gross service 20, <40 years————————Small opacities 1/0 or more (X^ 2: 6.17)Avg fiber concentration <=25 f/mL: 16.0% Avg fiber concentration >25 f/mL: 33.5% ——Pleural changes (X^ 2: 0.17)Avg fiber concentration <=25 f/mL: 23.7% Avg fiber concentration >25 f/mL: 26.7% ——Both of above (X^ 2: 0.38)Avg fiber concentration <=25 f/mL: 10.0% Avg fiber concentration >25 f/mL: 13.5% ——Small opacities 2/1 or more (X^ 2: 0.29)Avg fiber concentration <=25 f/mL: 3.8% Avg fiber concentration >25 f/mL: 6.0% ——Pleural thickening grade 2 or more (X^ 2: 0.15)Avg fiber concentration <=25 f/mL: 4.2% Avg fiber concentration >25 f/mL: 5.4% Prevalence of radiographic changes by exposure accumulated to age 45 (Table 4)——Small opacities 1/0 or moreAccumulated exposure <150 f/mL*yrs: 22.4% Accumulated exposure 150-<300 f/mL*yrs: 15.2% Accumulated exposure 300-<600 f/mL*yrs: 20.3% Accumulated exposure 600-<1200 f/mL*yrs: 21.1% Accumulated exposure 1200-<2400 f/mL*yrs: 33.0% Accumulated exposure >=2400 f/mL*yrs: 36.9% X^ 2 for trend (1 df): 11.55——Pleural changesAccumulated exposure <150 f/mL*yrs: 29.0% Accumulated exposure 150-<300 f/mL*yrs: 27.3% Accumulated exposure 300-<600 f/mL*yrs: 30.5%	Medium	3083980

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Outcomes were confirmed as follows: (1) radiographic lung changes = 2 certified readers with a 3rd resolving as needed; (2) pleural pain = questionnaire, defined as chest pain lasting 6h or more with physician evaluation; (3) dyspnea = American Thoracic Society questionnaire; (4) lung function = spirometry and CO diffusing capacity by trained technicians; (5) rales (lung crackles) = auscultation at 4 locations; and (6) nail clubbing = physical exam. Study Design: Cohort (Retrospective), Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 512 predominantly white male workers currently employed at facility in Ohio processing tremolite-contaminate vermiculite from Libby, MO for use as an inert carrier. (Sample included 32 females; no separate analysis of women, number too small to influence findings. 496 were white.)	PCM Air (personal level), Air (area level), Occupational Mean (SE) fibers/mL-year ranged from 0.35 fibers/mL-year in group I non-smokers to 7.55 fibers/mL year among group III ex-smokers. The distribution across categories of cumulative fiber exposure (CFE) was: <1 fiber/mL, n=253 (50.5%) individuals; 1-10 fiber/mL year, n=200 (39.9%) subjects; and >10 fibers/mL-year, n=48 (9.6%) participants.; Asbestos - Tremolite: 14567-73-8, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7-Asbestos-Libby amphibole: 1318-09-8	22 (4.4%) of participants had radiographic lung changes. Overall, despite the low exposure, CFE was significantly associated with radiographic lung changes, pleuritic chest pain and dyspnea, but not lung function measures, rales, or finger clubbing (discriminant analysis p<0.05). [A] The mean difference in CFE for radiographic lung changes vs age-matched controls was 5.8 fibers/mL-year overall (p=0.041); larger for 11 pleural or parenchymal changes (8.6 fibers/mL-year, p=0.082) vs 11 costophrenic angle blunting only (3.0 fibers/mL-year, p=0.232). [B] Stratifying by CFE, the prevalence of radiographic lung changes was: 2.4% for <1, 5.0% for 1-10, and 12.5% for >10 fibers/mL-year. Only 9.6% of employees had >10 fibers/mL-years of CFE; only 10.7% had worked >20 years. Of the n=48 employed for 20+ years, 11.1% had radiographic changes. Comments: Note: Libby ore was later found to contain winchite and richterite along with tremolite.	Medium	29685
Lung cancer mortality ascertained from death certificates.	Adults or general, Occupational; PESS included in study; Female, Male; Workers from four asbestos textile mills: (1940-2003), North Carolina and South Carolina, 6136 exposed (3717 men and 2419 women)	TEM Air (area level), Air (indoor), Occupational Exposure was assessed based on diameter (four categories) and length (six categories). The median cumulative exposure across the combined cohort was 8.2 f-y/ml (Elliott et al. 2012, HERO ID 1247861). Majority chrysotile, some amosite and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	The log rate of lung cancer mortality increased by 0.39 per IQR (95% CI: 0.02-0.057, p=0.001) for total TEM fibers.Fibers 5 - 10 um long and <0.25 um in diameter were associated most strongly with lung cancer mortality (log rate 4% per IQR, p<0.001).	High	1257856

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural cancer mortality assessed using ICD codes	Adults or general, Occupational; PESS included in study; Female, Male; North Carolina cohort of textile workers (1950-2003), USA, n = 5397	PCM Midget impingers Air (area level), Occupational Mean cumulative exposure 79.1 fiber-years/mL, Range <0.1 - 5677.9 fiber-years/mL for follow-up from 1950-2003, chrysotileMean cumulative exposure 35.9 fiber-years/mL, Range 0.1-1271.1 fiber-years/mL for follow-up from 1999-2003, chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	"Positive, statistically significant associations were observed between mortality from all pleural cancer (including mesothelioma) and time since first exposure (TSFE) to asbestos (rate ration [RR], 1.19; 95% CI, 1.06-1.34 per year), duration of exposure, and cumulative exposure (RR, 1.15; 95% CI, 1.04-1.28 per 100 f-years/mL; 10-year lag)." Comments: This study was evaluated for mesothelioma in Asbestos Part 1.	High	5160027

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Prevalent Malignant Pleural Mesothelioma identified through a multi-step screening process. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; The study population comprised 3 groups of adults >20y of age: an environmentally exposed group residing in 6 communities located from 100 meters to 2.5 km from an asbestos plant (n=2913); active workers at the plant with employment duration ranging from 0-10 to >40 years (n=487); and residents in an agricultural community 45 km from the plant (n=979).	PCM Air (area level), Air (outdoor) Exposure was measured using air samples collected in the asbestos factory and in outdoor ambient air in the residential communities. Concentrations (fibers/cc) were quantified based on PCM counts of fibers $> 5\ \mu$m using samples collected on membrane filters; duration of residence or employment data were collected. Mean concentrations were: 0.59 f/mL-years for the occupationally exposed with higher levels in selected areas; concentrations from 0.021 f/mL (2.5 km from plant) to 2.16 f/mL (100m from plant) for the environmentally exposed; and 0.0021 f/mL for the comparison group.; Asbestos - Chrysotile (serpentine): 12001-29-5	No multivariable adjusted results. –Prevalence of mesothelioma in environmentally exposed subjects by increasing mean distance [fiber concentration] of residential area from asbestos factory: 100m [2.16 f/mL] = 4.5% (39/873); 800m [0.04 fibers/mL] = 2.6% (17/644); 1 km group a [0.021 fibers/mL] =2.4% (8/335), 1km group b [0.021 fibers/mL] =2.2% (9/412); 2km [0.025 fibers/mL] =1.9% (6/318), 2.5 km [0.021 fibers/mL] = 1.2% (4/331). –Relative risk of mesothelioma for any vs no asbestos exposure in the full study population: 25.68 (Table 6, no 95% CI reported); only n=1 case in unexposed group. –Prevalence of mesothelioma in the full study population by intensity of exposure: <0.5 f/mL = 1.3% (45/3395); >0.75 f/mL = 4.5% (43/984). –Prevalence of mesothelioma in the full study population by estimated cumulative exposure: <7 f/mL-years = 1.4% (45/3175); 7.01 to 20 fibers/mL years - 0% (0/139); >20 f/mL years = 4.0% (43/1065) –Prevalence of mesothelioma in environmentally exposed females by duration of residence: 0-10y = 0% (0/122), 11-20y = 2.3% (3/129), 21-30y = 4.9% (7/142), 31-40y = 3.2% (10/311), >40y = 5.7% (34/593). –Prevalence of mesothelioma in environmentally exposed males by duration of residence: 0-10y = 0% (0/261), 11-20y = 0.6% (2/349), 21-30y = 1.5% (7/457), 31-40y = 1.7% (3/181), >40y = 4.6% (17/368). Prevalence of mesothelioma also shown for occupationally exposure by work locations with varied fiber concentrations. Comments: The study provides information on prevalent mesothelioma associated with high levels of environmental exposure in both men and women. There are important limitations most notably the lack of adjustment for confounders, and concerns about healthy worker effect bias in the occupationally exposed group.	Medium	2593920

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Small opacities (profusion >=1/0)	Adults or general, Occupational; PESS included in study; Male; 227 male and female maintenance and custodian workers recruited from nine centers in the Paris area, Caen, and Lyon.	PCM PCM mixed with occupational reports and professional judgement with the French Evalutil database Air (area level), Occupational Cumulative exposure index <0.25 f/mL*years, 0.25-1.49 f/mL*years, and >=1.5 f/mL*years; Asbestos - Not specified: 1332-21-4	Authors reported the multivariate logistic regression (Model C= CEI, age, BMI and tobacco smoking) of small opacities by cumulative exposure index of <0.25 f/mL*years as the reference odds ratio (1), 0.25-1.49 f/mL*years = 1.0 [0.27-3.67], and >=1.5 f/mL*years = 1.24 [0.34-4.51]. These positive findings were not significant.Table 5 reported frequency of radiological abnormalities of small opacities as <0.25 f/mL*years= 5 cases (5.1%) 0.25-1.49 f/mL*years= 5 cases (5.4%)>=1.5 f/mL*years= 6 (6.8%) and reported a p-value of 0.87.	Medium	3080192
Any pleural thickening	Adults or general, Occupational; PESS included in study; Male; 227 male and female maintenance and custodian workers recruited from nine centers in the Paris area, Caen, and Lyon.	PCM PCM mixed with occupational reports and professional judgement with the French Evalutil database Air (area level), Occupational Cumulative exposure index <0.25 f/mL*years, 0.25-1.49 f/mL*years, and >=1.5 f/mL*years; Asbestos - Not specified: 1332-21-4	Authors reported the multivariate logistic regression (Model C= CEI, age, BMI and tobacco smoking) of ANY pleural thickening by cumulative exposure index of <0.25 f/mL*years as the reference odds ratio (1), 0.25-1.49 f/mL*years = 0.76 [0.30-1.88], and >=1.5 f/mL*years = 1.24 [0.52-2.95]. These findings were not significant.Table 5 reported frequency of radiological abnormalities of any pleural thickening as <0.25 f/mL*years= 12 cases (12.4%) 0.25-1.49 f/mL*years= 11 cases (12%)>=1.5 f/mL*years= 17 (19.3%) and reported a p-value of 0.29.	Medium	3080192
Circumscribed pleural thickening	Adults or general, Occupational; PESS included in study; Male; 227 male and female maintenance and custodian workers recruited from nine centers in the Paris area, Caen, and Lyon.	PCM PCM mixed with occupational reports and professional judgement with the French Evalutil database Air (area level), Occupational Cumulative exposure index <0.25 f/mL*years, 0.25-1.49 f/mL*years, and >=1.5 f/mL*years; Asbestos - Not specified: 1332-21-4	Table 5 reported frequency of radiological abnormalities of circumscribed pleural thickening as <0.25 f/mL*years= 12 cases (12.4%) 0.25-1.49 f/mL*years= 10 cases (10.9%)>=1.5 f/mL*years= 15 (17.1%) and reported a p-value of 0.45.	Medium	3080192

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diffuse pleural thickening	Adults or general, Occupational; PESS included in study; Male; 227 male and female maintenance and custodian workers recruited from nine centers in the Paris area, Caen, and Lyon.	PCM PCM mixed with occupational reports and professional judgement with the French Evalutil database Air (area level), Occupational Cumulative exposure index <0.25 f/mL*years, 0.25-1.49 f/mL*years, and >=1.5 f/mL*years; Asbestos - Not specified: 1332-21-4	Table 5 reported frequency of radiological abnormalities of diffuse pleural thickening as <0.25 f/mL*years= 0 cases 0.25-1.49 f/mL*years= 1 cases (1.1%)>=1.5 f/mL*years= 2 (2.3%) and reported a p-value of 0.24.	Medium	3080192

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma Study Design: Cross-Sectional	Occupational; PESS included in study; Male; A total of n=69 male mesothelioma cases and n=57 controls selected from those within the original Surveillance of Work-related and Occupational Respiratory Disease (SWORD) national study in the UK were included within the current study. Case and control ages ranged from 36 to 52 years.	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Table 2 notes the distribution of asbestos lung fiber concentrations in cases and controls for each fiber quartile and each fiber type; 1.) 0.0 f/ug: crocidolite cases n=28, controls n=48; amosite cases n=13, controls n=34; tremolite cases n=55, controls n=51; all amphiboles cases n=6, controls n=28; chrysotile cases n=14, controls n=19. 2.) 0.1-0.9 f/ug: crocidolite: cases n=27, controls n=8; amosite cases n=23, controls n=18; tremolite cases n=13, controls n=6; all amphiboles cases n=26, controls n=24; chrysotile cases n=28, controls n=21. 3.) 1.0-9.9 f/ug: crocidolite cases n=11, controls n=1; amosite cases n=26, controls n=5; tremolite cases n=1, controls n=0; all amphiboles cases n=28, controls n=4; chrysotile cases n=26, controls n=16; 4.) >=10.0 g/ug: crocidolite cases n=3, controls n=0; amosite cases n=7, controls n=0; tremolite cases n=0, control n=0; all amphiboles cases n=9, controls n=1; chrysotile cases n=1; controls n=1. Distribution of fiber types for exposures other than asbestos were reported within Table 5.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Not specified: 1332-21-4, Chrysotile (serpentine): 12001-29-5	Attributable fraction analyses results (Table 3) indicated lung amosite and crocidolite fibers could account for about 80% of cases of mesothelioma, and tremolite for some 7% . A steep linear trend in mesothelioma odds ratios (ORs) were noted for all amphiboles combined with an indication for additive effects: 0.0 f/ug: referent; 0.1-0.9 f/ug: adjusted OR = 1.9 (0.5-6.7); 1.0-9.9 f/ug: adjusted OR = 2.2 (0.6-8.4); >=10.0 f/ug: –; model with linear exposure term: adjusted OR = 2.2 (<0.0 - >999).	Medium	758954

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality. Study Design: Cross-Sectional	Adults or general; PESS not included in study; Female, Male; 78 deceased mesothelioma cases and 78 referents in nine Canadian provinces, 1979-1984, age range not reported.	TEM Biomonitoring Biomonitoring matrix: Lung sample; Asbestos (amphiboles), geometric mean (per ug dry weight lung tissue), 2.89 (cases - short fiber), 0.74 referents (short fiber), 1.96 (cases - long fiber), 0.28 (referents - long fiber).Asbestos (chrysotile), geometric mean (per ug dry weight lung tissue), 6.30 (cases - short fiber), 5.14 referents (short fiber), 0.31 (cases - long fiber), 0.22 (referents - long fiber).; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9, Chrysotile (serpentine): 12001-29-5	Increased odds of mesothelioma with chrysotile asbestos exposure; OR for 10-100 short fibers chrysotile/ug=1.2; for 1-10 long fibers chrysotile/ug=1.5; 10-100 long fibers chrysotile/ug=5.1. Significantly decreased risk increment of mesothelioma with chrysotile: risk increment (CI) = [long fibers] <0 (<0, 8); [short fibers] 0.02 (<0, 0.2).	Medium	3082766
Lung cancer Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.98 (95% CI: 1.53-2.57); Area B OR = 1.09 (95% CI: 0.78-1.51)	Uninformative	7836
Laryngeal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 0.48 (95% CI: 0.15-1.56); Area B OR = 1.16 (95% CI: 0.38-3.55) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 17.4 mpcf (area A) and 16.3 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 2.55 (95% CI: 1.52-4.27); Area B OR = 1.11 (95% CI: 0.47-2.62)	Uninformative	7836

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos- Libby amphibole: 1318-09-8	No statistically significant associations were observed.	Medium	29964
Respiratory cancer mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 36% mortality (RR=0.36, 95% CI=0.03 to 1.20).No statistically significant associations were observed (McDonald et al. 1986, HERO ID: 29964).	Medium	29964
Pneumoconiosis mortality assessed by nosologist using ICD-8 (McDonald et al. 1986). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	No statistically significant associations were observed (McDonald et al. 1986, HERO ID: 29964).	Medium	29964

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory disease mortality assessed by nosologist using ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8-Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 38% mortality (RR=0.38, 95% CI=0.12 to 0.96).	Medium	29964
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
small opacities	Adults or general, Occupational; PESS included in study; Male; Past and current employees from a vermiculite mine in Montana: 164 current male employees, 80 past male employees, plus 47 men without known exposure	midget impinger and membrane filter measurement Air (indoor) Fiber concentrations were categorized as cumulative exposure and reported by 5 levels: <10, 10 to <20, 20 to <100, 100 to <200, and >= 200 f/mL y.; Asbestos - Tremolite: 14567-73-8	Logistic regression analysis showed independent effects of age, smoking, and exposure on the prevalence of small opacities and of age and probably of exposure on pleural thickening. The trend of increasing prevalence of small opacities with increasing exposure is x^ 2 (ldf) = 5.4, p = 0.02.By retirement age, the increase in prevalence of small opacities (>= 1/0) lies between 5% and 10% per 100 f/ml years.The prevalence of abnormalities by cumulative exposure for men aged 60 and over is x^ 2 (ldf) = 6.4, p = 0.01. Comments: Results were extracted from the abstract and results text.	Low	709695

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
pleural thickening	Adults or general, Occupational; PESS included in study; Male; Past and current employees from a vermiculite mine in Montana: 164 current male employees, 80 past male employees, plus 47 men without known exposure	midget impinger and membrane filter measurement Air (indoor) Fiber concentrations were categorized as cumulative exposure and reported by 5 levels: <10, 10 to <20, 20 to <100, 100 to <200, and >= 200 f/mL y.; Asbestos - Tremolite: 14567-73-8	Logistic regression analysis showed independent effects of age, smoking, and exposure on the prevalence of small opacities and of age and probably of exposure on pleural thickening. The trend of increasing prevalence of pleural thickening with increasing exposure is x^ 2 (ldf) = 2.6, p = 0.10. The prevalence of abnormalities by cumulative exposure for men aged 60 and over is x^ 2 (ldf) = 0.9, p > 0.20. Comments: Results were extracted from the abstract and results text.	Low	709695
Malignant neoplasm peritoneum mesothelioma (ICD 158)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm of the peritoneum (ICD 158) observed 9 deaths and expected 0.5. The statistically significant SMR (p<0.01) = 1985.3 (907.7, 3768.8). Latency of >= 40 years resulted in statistically significant (p<0.01) SMR of 3954 (1590,8148). Total latency also found statistically significant (p<0.01) SMR of 1985 (908, 3769).	Medium	3078781
Malignant neoplasm respiratory tract (160-165)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	MN respiratory tract (160-165) observed 114 deaths and expected 61.6. The statistically significant SMR (p<0.01) = 184.6 (152.3, 221.8).		3078781

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms larynx (161) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms larynx (161) mortality observed 5 deaths and expected 5.2. The statistically significant SMR ($p<0.01$) = 96.8 (31.4,225.9).	Medium	3078781
Malignant neoplasms pleura (163) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms pleura (163) mortality observed 24 deaths and expected 0.9. The statistically significant SMR ($p<0.01$) = 2616.6 (1676.5, 3893.3).	Medium	3078781
Respiratory diseases (460-519) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Respiratory diseases (460-519) mortality observed 81 deaths and expected 43.3. The statistically significant SMR ($p<0.01$) =187.2 (148.7, 232.7).	Medium	3078781

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Bronchitis, emphysema, asthma (490-493) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Bronchitis, emphysema, asthma (490-493) mortality observed 30 deaths and expected 30.2. The non-significant SMR = 99.5 (67.1, 142.0).	Medium	3078781
Pneumoconiosi (500-505) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Pneumoconiosi (500-505) mortality observed 42 deaths and expected 0.3. The statistically significant SMR ($p<0.01$) = 13,313.2 (9595.0, 17 995.7).	Medium	3078781
Asbestosis (501) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Asbestosis (501) mortality observed 41 deaths and expected 0.1. The statistically significant SMR ($p<0.01$) = 43,385.3 (31,133.7-58,856.9).	Medium	3078781

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diffuse pleural fibrosis observed in the study population.	Adults or general; PESS may not included in study; Female, Male; Male adults 60 years and older, Female adults 50 years and older with significantly higher ORs compared to male and female adults 30-39 years old.	PCM Air (indoor), Air (outdoor) The authors took indoor air samples from houses with white-washed walls with white soil. Outdoor samples were taken from the center of the village. The authors assumed each individual spent 8 hours/day working outdoors and 16 hours inside their house, for 11 months/ year.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Odds ratios with significant differences only:Male 60-69 years old: OR = 11.5 (1.5-88.4)Male >69 years old: OR= 12.1 (1.5-96.6)Female 50-59 years old: OR= 6.6 (1.5-29.1)Female 60-69: OR= 6.6 (1.5-29.4)Female >69: OR= 7.8 (1.6-37.3)	Medium	709524
Pleural plaque observed in the study population.	Adults or general; PESS may not included in study; Female, Male; Male and female adults 60 years and older with significantly higher ORs compared to male and female adults 30-39 years old.	PCM Air (indoor), Air (outdoor) The authors took indoor air samples from houses with white-washed walls with white soil. Outdoor samples were taken from the center of the village. The authors assumed each individual spent 8 hours/day working outdoors and 16 hours inside their house, for 11 months/ year.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Odds ratios with significant differences only:Male 60-69 years old: OR = 5.9 (2.0-17.4)Male >69 years old: OR= 6.0 (1.9-18.7)Female 60-69: OR= 3.5 (1.1-10.7)Female >69: OR= 4.7 (1.4-15.4)	Medium	709524
Asbestosis cases observed in the study population.	Adults or general; PESS may not included in study; Female, Male; Male and female adults 30 years and older living in villages known to be exposed to asbestos.	PCM Air (indoor), Air (outdoor) The authors took indoor air samples from houses with white-washed walls with white soil. Outdoor samples were taken from the center of the village. The authors assumed each individual spent 8 hours/day working outdoors and 16 hours inside their house, for 11 months/ year.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	4 out of 923 study participants had asbestosis (0.4% prevalence).	Medium	709524

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Chronic obstructive pulmonary disease (COPD) mortality	Adults or general; PESS included in study; Female, Male; Farmers from rural villages in Turkey which were tested for environmental asbestos in white soil	PCM Air (indoor), Air (outdoor) "The cumulative fiber count of the villagers during their lifespan ranged from 0.19 to 14.61 fiber-years/ml. Mean cumulativeexposure was 4.0 fiber-years/ml for women with a 52-year of median exposureduration and 2.7 fiber-years/ml for men with a 55-year of median exposure duration (p <0.001)."; Asbestos - Tremolite: 14567-73-8, Tremolite: 14567-73-8	Chronic obstructive pulmonary disease (COPD) mortality (n=18) SMRs were increased for men and significantly increased for women in exposed villages. Men SMR= 1.59 (1.00-2.53)Women SMR= 2.65 (1.10-6.36) p>0.05	Medium	2325159
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	Age and height adjusted FVC (with standard error of mean) was lower among mixers (4.50 +/- 0.10 liters, p<0.05) and inspectors (4.36 +/- 0.19 liters, p<0.05) than among controls (4.82 +/- 0.09 liters). Comments: Age and height adjusted FVCs (with standard error of mean) by smoking behavior and length of asbestos exposure were also provided but differences between exposed and controls were not significant. FEV1 and FEV1/FVC ratios by group are provided in Table 2 but also did not show significant differences.	Medium	3084463
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	Age and height adjusted FVC (with standard error of mean) was lower among mixers (4.50 +/- 0.10 liters, p<0.05) and inspectors (4.36 +/- 0.19 liters, p<0.05) than among controls (4.82 +/- 0.09 liters). Comments: Age and height adjusted FVCs (with standard error of mean) by smoking behavior and length of asbestos exposure were also provided but differences between exposed and controls were not significant. FEV1 and FEV1/FVC ratios by group are provided in Table 2 but also did not show significant differences.	Medium	3084463

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	Mean rales scores (with standard error of mean) were significantly higher among mixers (1.47 +/- 0.28, p<0.01) than controls (0.50 +/- 0.19).Mean rales scores (with standard error of mean) were significantly higher among exposed workers aged >40 years for mixers (2.14 +/- 0.47, p<0.05) and inspectors (1.64 +/- 0.49, p<0.05) than exposed workers aged 40 years and younger.Mean rales scores (with standard error of mean) were significantly higher among exposed workers who smoked >20 pack-years for grinders (1.32 +/- 0.28, p<0.01) and inspectors (2.14 +/- 0.67, p<0.05) than exposed workers who smoked 20 pack-years or less.Mean rales scores (with standard error of mean) were significantly higher among workers exposed to asbestos for >10 years for mixers (2.31 +/- 0.47, p<0.05) and inspectors (2.28 +/- 0.60, p<0.05) than workers exposed for 10 years or less.Mean rales score was significantly higher among among mixers with long asbestos exposure (>10 years) and heavy smoking (>20 pack-years) (2.56, p-value not provided) than mixers with less exposure to asbestos and smoking (0.93).	Medium	3084463
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	Prevalence of cough was significantly higher among grinders (50% , p<0.05) than any other group. Comments: Results for sputum, wheeze, and dyspnea were not statistically significant.	Medium	3084463
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	Approximately one third of workers in each group had a positive result (loose v. dry) on the loose cough test. Comments: Statistical significance not reported for these results.	Medium	3084463

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Presence of slight lung function loss as an indicator for early signs of asbestos-induced lung disease. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 101 male asbestos-product workers from a heat-resistant and friction composites factory in Connecticut, 1972 (separated as mixers, grinders, inspectors, and controls).	membrane filter Air (area level) Mixing process site (range): 4-20 fibers/mlGrinding site (range): 3-10 fibers/mlInspection areas (range): 1-2 fibers/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Anthophyllite: 17068-78-9	All results have interpreted as within normal limits. No statistical differences between groups.	Medium	3084463
Respiratory disease Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Non-significant (p=0.53) Comments: Fiber years (/IQR: 70 fibers x years/cm") in model;	Medium	2079066
FEV1 Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.10 (-0.14, -0.05) Comments: Fiber years (/IQR: 70 fibers x years/cm") in model; results statistically significant (two-sided $p < 0.05$);	Medium	2079066

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FVC Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.12 (-0.17 -0.06) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant (two-sided $p < 0.05$);	Medium	2079066
PEF Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.14 (-0.30 , 0.01) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results not statistically significant	Medium	2079066
MEF75 Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.13 (-0.28, 0.03) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results not statistically significant	Medium	2079066

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
MEF50 Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.06 (-0.17, 0.05) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results not statistically significant	Medium	2079066
MEF25 Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): -0.05 (-0.10, -0.005) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant ($p<0.05$)	Medium	2079066
Rounded small opacities Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Odds ratio (95% CI): 1.22 (1.02, 1.47) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant ($p<0.05$)	Medium	2079066

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Irregular small opacities Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Odds ratio (95% CI): 1.50 (1.24, 1.81) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant ($p<0.05$)	Medium	2079066
Pleural thickening Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Odds ratio (95% CI): 1.35 (1.12, 1.62) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant ($p<0.05$)	Medium	2079066
Large opacities Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Odds ratio (95% CI): 1.29 (0.84, 1.99) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results not statistically significant	Medium	2079066

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The primary endpoint was asbestosis, defined as 3 or more of 5 indications: dyspnea (shortness of breath); rales (abnormal lung sounds); finger clubbing (enlargements at ends); FVC< 80% based on spirometry; chest x-ray shadows consistent with asbestosis. Independent medical exams in 8 of the 11 cases supported this diagnosis. Each indication or symptom was also analyzed as an endpoint. These indications were measured by trained staff using structured protocols involving: a physical exam that included auscultation and recording of breath sounds, x-rays read by three radiologists, a standardized respiratory questionnaire, frontal and lateral finger tracings measured with published methods; and spirometry using published calibration methods and references. Examiners were unaware of exposure history. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The study included all 101 male pipe-coverers employed at a New England shipyard in 1965. Pipe coverers were exposed to low-level asbestos; procedures were described as not changing appreciably over time. Controls were 94 unexposed shiplifters and pipefitters employed at the same shipyard, matched on age and duration of employment. The mean duration of employment was about 17 years, and the mean age 41 years.	PCM Air (area level) The mean estimated exposure concentration was 5.2 million particles per cubic foot (mppcf), a weighted average derived from measures in 6 locations using midget impingers and PCM in 1965. The mean concentration was close to the prevailing limit of 5.0 mppcf at the time of the study. Exposure was predominantly amosite asbestos, along with some chrysotile asbestos. Duration of exposure based on years of employment was the primary measure analyzed: the mean duration was 17.4 years, ranging from <5 to >20 years. Cumulative exposure estimates were derived by multiplying the mean concentration by duration, assuming constant exposure over time (historical konimeter measures varied over time).; Asbestos - Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5	There were statistically significant differences between exposed workers and matched controls in the prevalence of dyspnea (25.7 v 6.4%), basilar rales (22.8 v 5.3%), finger clubbing (19.8 v 5.3%), FVC% (means of 92.1% vs 102.7% of predicted), and X-ray scores of 5 or 6 (12.9% vs 2.1%). With the exception of FVC, each of these indications increased with age in pipe coverers but not controls. Asbestosis was identified in 11 of the 101 pipe coverers (38%) and 1 of the 94 controls. Asbestosis was diagnosed among men exposed for 13 or more years, or above an estimated 60 mppcf-years. Prevalence of asbestosis and each of the 5 indications rose with increasing duration of exposure. [Note, there is an apparent error in the x-axis label for Figure 4: the 5 exposure, years categories have the 5 age group labels used to describe the distribution of the same 5 outcomes by age category in Figure 5.] Comments: Because numbers are sparse, the authors do caution that "conclusions should not be drawn from this single case".	Medium	144

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The primary endpoint was asbestosis, defined as 3 or more of 5 indications: dyspnea (shortness of breath); rales (abnormal lung sounds); finger clubbing (enlargements at ends); FVC< 80% based on spirometry; chest x-ray shadows consistent with asbestosis. Independent medical exams in 8 of the 11 cases supported this diagnosis. Each indication or symptom was also analyzed as an endpoint. These indications were measured by trained staff using structured protocols involving: a physical exam that included auscultation and recording of breath sounds, x-rays read by three radiologists, a standardized respiratory questionnaire, frontal and lateral finger tracings measured with published methods; and spirometry using published calibration methods and references. Examiners were unaware of exposure history. Study Design: Cross-Sectional	Occupational; PESS included in study; Male; The study included all 101 male pipe-coverers employed at a New England shipyard in 1965. Pipe coverers were exposed to low-level asbestos; procedures were described as not changing appreciably over time. Controls were 94 unexposed shiplifters and pipefitters employed at the same shipyard, matched on age and duration of employment. The mean duration of employment was about 17 years, and the mean age 41 years.	PCM Air (area level) The mean estimated exposure concentration was 5.2 million particles per cubic foot (mppcf), a weighted average derived from measures in 6 locations using midget impingers and PCM in 1965. The mean concentration was close to the prevailing limit of 5.0 mppcf at the time of the study. Exposure was predominantly amosite asbestos, along with some chrysotile asbestos. Duration of exposure based on years of employment was the primary measure analyzed: the mean duration was 17.4 years, ranging from <5 to >20 years. Cumulative exposure estimates were derived by multiplying the mean concentration by duration, assuming constant exposure over time (historical konimeter measures varied over time).; Asbestos - Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5	There were statistically significant differences between exposed workers and matched controls in the prevalence of dyspnea (25.7 v 6.4%), basilar rales (22.8 v 5.3%), finger clubbing (19.8 v 5.3%), FVC% (means of 92.1% vs 102.7% of predicted), and X-ray scores of 5 or 6 (12.9% vs 2.1%). With the exception of FVC, each of these indications increased with age in pipe coverers but not controls. Asbestosis was identified in 11 of the 101 pipe coverers (38%) and 1 of the 94 controls. Asbestosis was diagnosed among men exposed for 13 or more years, or above an estimated 60 mppcf-years. Prevalence of asbestosis and each of the 5 indications rose with increasing duration of exposure. [Note, there is an apparent error in the x-axis label for Figure 4: the 5 exposure, years categories have the 5 age group labels used to describe the distribution of the same 5 outcomes by age category in Figure 5.] Comments: Because numbers are sparse, the authors do caution that "conclusions should not be drawn from this single case".	Medium	144

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Austrian asbestos cement workers: 2,816 males asbestos cement workers; 49 lung cancer cases	PCM Air (personal level), Occupational Individual exposures were estimated (from 1973) from personal records on duration of exposure at different work places, estimations of dust concentration until 1965, dust measurements mainly by a conimeter method until 1975, and by personal air samplers and membrane filter methods (PCM) subsequently. Central tendencies not provided, but exposure is dichotomozed as above or below 25 fibres/mL-year.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Not specified: 1332-21-4	SMR for those <=25 fibres/ml-year compared to Austrian general population (smoking adjusted): 1.26 (95% CI: 0.83-1.95), ns; SMR for those >25 fibres/ml-year compared to Austrian general population (smoking adjusted): 0.96 (95% CI: 0.63-1.43), ns; Results without smoking adjustment were significant for both groups ($p<0.01$ and $p<0.05$, respectively).	Medium	3082545
Mesothelioma Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Austrian asbestos cement workers: 2,816 males asbestos cement workers; 4 mesothelioma cases, 16 nested controls	PCM Air (personal level), Occupational Individual exposures were estimated (from 1973) from personal records on duration of exposure at different work places, estimations of dust concentration until 1965, dust measurements mainly by a conimeter method until 1975, and by personal air samplers and membrane filter methods (PCM) subsequently. Central tendencies not provided, but exposure is dichotomozed as above or below 25 fibres/mL-year.; Asbestos - Crocidolite (riebeckite): 12001-28-4	All verified mesothelioma cases were found to have had medium to high exposure whereas controls had negligible to medium exposure (chi-square test=2.81, df=1, p=0.047)	Medium	3082545

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory disease mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level) Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 87 (77-96); p<0.01Females: SMR (90% CI)54 (38-69); p<0.01	Low	3082792

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory disease mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level) Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 87 (77-96); p<0.01Females: SMR (90% CI)54 (38-69); p<0.01	Low	3082792

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 108 (97-120); not significantFemales: SMR (90% CI)66 (40-104); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 108 (97-120); not significantFemales: SMR (90% CI)66 (40-104); not significant Comments: Table 1	Low	3082792
Asbestosis deaths	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Expected: * (rare cause of death in general population)Observed: 26O/E: - Comments: The ratio of observed and expected deaths from asbestosis is limited because of the limited nature of exposure to asbestos amongst the general population.	Medium	158
Pulmonary disease diagnoses (asbestosis, pleural plaques) extracted from patient files and referral letters; asbestos bodies in BAL measured with light microscopy Study Design: Cohort (Retrospective), Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Patients whose doctors referred them for bronchoscopy and BAL and requested asbestos body counts: (2016), Belgium, 44 patients had confirmed asbestosis, 72 patients had confirmed pleural plaques, and 91 were in the other disease/referent group (95% of patients in study were male).	Light microscopy Bronchoalveolar lavage samples collected retrospectively The median asbestos body concentration for the entire population (n=578) was 0.5 asbestos bodies/mL (samples collected between 1997 and 2014).; Asbestos - Not specified: 1332-21-4	Patients with asbestosis or pleural plaques had higher asbestos body concentrations compared to patients in other disease groups ($p < 0.0001$, Kruskal-Wallis test). No other statistical results were provided.	Low	3531256

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary disease diagnoses (asbestosis, pleural plaques) extracted from patient files and referral letters; asbestos bodies in BAL measured with light microscopy Study Design: Cohort (Retrospective), Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Patients whose doctors referred them for bronchoscopy and BAL and requested asbestos body counts: (2016), Belgium, 44 patients had confirmed asbestosis, 72 patients had confirmed pleural plaques, and 91 were in the other disease/referent group (95% of patients in study were male).	Light microscopy Bronchoalveolar lavage samples collected retrospectively The median asbestos body concentration for the entire population (n=578) was 0.5 asbestos bodies/mL (samples collected between 1997 and 2014).; Asbestos - Not specified: 1332-21-4	Patients with asbestosis or pleural plaques had higher asbestos body concentrations compared to patients in other disease groups ($p < 0.0001$, Kruskal-Wallis test). No other statistical results were provided.	Low	3531256
pleural mesothelioma Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Occupational; PESS not included in study; Male; 58,279 males from the NCLS in the Netherlands, 1986-2003, 55-69 years of age. A subcohort of 2,107 men were randomly selected to assess person-years at risk.	Occupational Asbestos, not specified. Tertiles of cumulative exposure (probability of exposure * intensity) calculated via DONJEM and FINJEM.; Asbestos - Not specified: 1332-21-4	Pleural mesothelioma hazard positively associated with cumulative asbestos exposure. For DOMJEM: HR (95% CI) = 2.80 (1.62, 4.83) for Tertile 2; 4.71 (3.06, 7.26) for Tertile 3; p for trend <0.001. For FINJEM: HR (95% CI) = 2.69 (1.60, 4.53) for Tertile 1 compared with non-exposed; 3.04 (1.80, 5.12) for Tertile 2 compared with non-exposed; 3.37 (2.03, 5.59) for Tertile 3 compared with non-exposed; p for trend <0.001. Comments: HR also calculated for duration of exposure and duration of high exposure using both DOMJEM and FINJEM.	Medium	3078062
lung cancer Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Occupational; PESS included in study; Male; 58,279 males from the NCLS in the Netherlands, 1986-2003, 55-69 years of age. A subcohort of 2,107 men were randomly selected to assess person-years at risk.	Occupational Asbestos, not specified. Tertiles of cumulative exposure (probability of exposure * intensity) calculated via DONJEM and FINJEM.; Asbestos - Not specified: 1332-21-4	Lung cancer hazard positively associated with cumulative asbestos exposure. For DOMJEM: HR (95% CI) = 1.55 (1.20, 2.00) for Tertile 2; 4.71 (3.06, 7.26) for Tertile 2; p for trend 0.005. For FINJEM: HR (95% CI) = 1.44 (1.12, 1.86) for Tertile 1 compared with non-exposed; 1.40 (1.09, 1.79) for Tertile 2 compared with non-exposed; 1.76 (1.30, 2.38) for Tertile 3 compared with non-exposed; p for trend <0.001. Positive associations found for small cell lung cancer, large cell lung cancer, and squamous cell carcinoma. No significant associations for adenocarcinoma. Comments: HR also calculated for duration of exposure and duration of high exposure using both DOMJEM and FINJEM.	Medium	3078062

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
laryngeal cancer Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Occupational; PESS included in study; Male; 58,279 males from the NCLS in the Netherlands, 1986-2003, 55-69 years of age. A subcohort of 2,107 men were randomly selected to assess person-years at risk.	Occupational Asbestos, not specified. Tertiles of cumulative exposure (probability of exposure * intensity) calculated via DONJEM and FINJEM.; Asbestos - Not specified: 1332-21-4	Laryngeal cancer of the supraglottis hazard positively associated with cumulative asbestos exposure. For DOMJEM: HR (95% CI) = 3.70 (1.58, 8.65) for Tertile 2; 4.71 (3.06, 7.26) for Tertile 2; p for trend 0.005. For FINJEM: HR (95% CI) = 3.18 (1.43, 7.10) for Tertile 3 compared with non-exposed; p for trend 0.001. No significant associations for laryngeal cancer of the glottis. Comments: HR also calculated for duration of exposure and duration of high exposure using both DOMJEM and FINJEM.	Medium	3078062
Forced vital capacity results as percentage of predicted from referents Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: 88.1 (p-value = 0.04) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean four-year decrements in FVC in exposed and referents as percentage of lung volumes in 1976 Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: -8.2 (p-value 0.06) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean four-year decrements in FEV1 in exposed subjects and referents as percentage of lung volumes in 1976 Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: -8.7 (p-value = 0.03) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean FEV1 for exposed subjects as percentage of predicted from referents Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: 85.8 (p-value = 0.007) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Forced vital capacity results as percentage of predicted from referents Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: 88.1 (p-value = 0.04) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean four-year decrements in FVC in exposed and referents as percentage of lung volumes in 1976 Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: -8.2 (p-value 0.06) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean four-year decrements in FEV1 in exposed subjects and referents as percentage of lung volumes in 1976 Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: -8.7 (p-value = 0.03) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Mean FEV1 for exposed subjects as percentage of predicted from referents Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 131 workers at an asbestos cement plant or other plant (referents), 1980, 33-68 years	Air (area level), Air (indoor), Occupational 19.7 fiber-years average (all); Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	>23 fiber-years: 85.8 (p-value = 0.007) (Ohlson et al., 1985, RefID 2238789) Comments: No significant findings for the <14 and 15-22 fiber-year exposure groups	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite chest wall thickening: Medium- 2.1 (1.1, 4.0) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite circumscribes thickening only: Medium- 2.2 (1.1, 4.6) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Costrophenic angle obliteration: High- 4.5 (1.3, 15) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite chest wall thickening: Medium- 2.1 (1.1, 4.0) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite circumscribes thickening only: Medium- 2.2 (1.1, 4.6) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Costrophenic angle obliteration: High- 4.5 (1.3, 15) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite chest wall thickening: Medium- 2.1 (1.1, 4.0) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Definite circumscribes thickening only: Medium- 2.2 (1.1, 4.6) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Radiological changes including pleural plaques, wall thickening, and opacities (average intensity OR with 90% CI) Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 203 blue collar workers and white-collar referents, Sweden, 25-79 years	Air (area level), Occupational Average intensity: 1.0 (0.1-8.6) f/mlCumulative dose: 19 (1/8-196) f-y/ml; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Costrophenic angle obliteration: High- 4.5 (1.3, 15) (Jakobsson et al., 1995, RefID 758934) Comments: All odds ratios use the "Low" exposure category as reference	Medium	2238789
Forced vital capacity Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 125 male asbestos cement plant workers in Sweden, 1976	Air (area level), Occupational 2 fibers/ml average 1950-1970; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	Exposed/controls: 4.30/4.5595.4 percent of predictedMean difference: -0.25 liters Comments: Predicted values derived from control group. These values represent means adjusted for age, height, tracheal area, and smoking.	Medium	2238788
Forced expiratory volume in 1 second Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 125 male asbestos cement plant workers in Sweden, 1976	Air (area level), Occupational 2 fibers/ml average 1950-1970;	Exposed/referents: 3.29/3.5991.6% of predicted-Mean difference: -0.30 Comments: The initial values reported are means adjusted for age, height, tracheal area, and smoking.		2238788

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary fibrosis (CT exploration of the lungs with 6+ high-resolution millimetric sections were used to assess clinical features of pulmonary fibrosis, including lesions, subpleural curvilinear lines, and ground-glass opacity. A grading scale of 0-3 was used (0 = normal, 1 = mild interstitial abnormalities, 2 = bilateral interstitial abnormalities with limited extent, 3 = profuse interstitial abnormalities), with grades 2 and 3 diagnosed as pulmonary fibrosis.) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; Former employees of occupational facilities with known asbestos exposures.	Air (area level) Cumulative-exposure index (CEI) for asbestos was calculated based on asbestos air measurements, job category, date of hire, date of assignment end, and duration of exposure (fibers/mL*years). For analysis, CEI was categorized at 3 levels: <25, 25-99.9, and >= 100 fibers/mL*years, with the lowest level serving as the reference group.; Asbestos - Not specified: 1332-21-4	OR (95% CI) for pulmonary fibrosis across CEI categoriesSubjects with 25-99.9 fibers/mL*years vs <25 fibers/mL*years: 2.9 (0.6, 13.5)Subjects with >=100 fibers/mL*years vs <25 fibers/mL*years: 6.4 (1.5, 28.4) Comments: Results adjusted for statistical model 2	Medium	3080175
Pleural plaques, asbestosis-related pulmonary fibrosis lesions. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 1101 over 50 year old male workers in Normandy France from asbestos-use plants, separated into 3 groups: Healthy N=476, Pleural Plaques N=474, Fibrosis N=61.	CEI divided by duration of exposure Air (area level), Occupational Obtained by occupational hygiene measurements and job-exposure matrix. Type of asbestos not specified, however in referenced article, type of asbestos was asbestos bodies (not specified) (Paris et al., 3080439). Airborne measurements were collected annually 1959-1999 in various workshops of plants, other subjects estimation of exposure was used based on French Database Evalutil. A cumulative exposure index (CEI) was then calculated and expressed in fibers/ml.years. Average exposure index calculated by dividing CEI by duration of exposure.; Asbestos - Not specified: 1332-21-4	Of 1011 total subjects recruited, outcomes measured by CT included: pleural plaques N=474 (46.9%); interstitial changes compatible with asbestosis N=61 (6%). Time since 1st exposure and either cumulative or mean exposure was significantly associated to the prevalence and, to the incidence of pleural plaques and asbestosis. Overall, TSFE was the key variable for both pleural plaques and asbestosis, and duration of exposure was not found to be predictive, adjusted on TSFE High exposure concentration to asbestos appears also to be a significant variable with a less significant than TSFE.	Medium	758967

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural plaques, asbestosis-related pulmonary fibrosis lesions. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Male; 1101 over 50 year old male workers in Normandy France from asbestos-use plants, separated into 3 groups: Healthy N=476, Pleural Plaques N=474, Fibrosis N=61.	CEI divided by duration of exposure Air (area level), Occupational Obtained by occupational hygiene measurements and job-exposure matrix. Type of asbestos not specified, however in referenced article, type of asbestos was asbestos bodies (not specified) (Paris et al., 3080439). Airborne measurements were collected annually 1959-1999 in various workshops of plants, other subjects estimation of exposure was used based on French Database Evalutil. A cumulative exposure index (CEI) was then calculated and expressed in fibers/ml.years. Average exposure index calculated by dividing CEI by duration of exposure.; Asbestos - Not specified: 1332-21-4	Of 1011 total subjects recruited, outcomes measured by CT included: pleural plaques N=474 (46.9%); interstitial changes compatible with asbestosis N=61 (6%). Time since 1st exposure and either cumulative or mean exposure was significantly associated to the prevalence and, to the incidence of pleural plaques and asbestosis. Overall, TSFE was the key variable for both pleural plaques and asbestosis, and duration of exposure was not found to be predictive, adjusted on TSFE High exposure concentration to asbestos appears also to be a significant variable with a less significant than TSFE.	Medium	758967
All cause and pneumoconioses/lung diseases mortality were determined from death certificates from local health authorities using ICD-9 codes. Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Workers in varying occupational settings: (2010), Germany, 576 exposued referents (all male).	Occupational Fiber concentrations were categorized into <25, 25-50, and >50 fiber years. Fiber types included chrysotile and crocidolite.; Asbestos - Not specified: 1332-21-4, Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMR (95% CI) for all cause mortality = 0.59 (0.49-0.70). NO statistically significant results for pneumoconioses/other lung disease mortality.	Medium	3079156
Mesothelioma assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.	Medium	163

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Pleural cancer mortality ascertained from death certificates and/or population registers and coded according to ICD-9	Adults or general, Occupational; PESS included in study; Male; Balangero chrysotile open-air mine worker cohort: (1945-2014), Italy, 1056 males were included in the most recent follow-up	PCM Air (area level), Air (outdoor), Occupational Mean concentrations varied by year and job category. "Mean concentrations in drilling were 37± 10 fibre/mL up to 1950 and 5± 1 fibre/mL in 1971"1976" (Pira et al. 2017, HERO ID 5060134). Majority chrysotile, occasional presence of crocidolite, 0.2% "0.5% balangeroite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMRs for pleural cancer mortality were 5.84 (95% CI 1.20 - 17.1%), 2.76 (95% CI 0.07 - 15.4), and 7.72 (95% CI 1.59-22.6) for <100, 100-400, and >400 cumulative fiber-years, respectively in the most recent follow-up (p for linear trend = 0.76) (Pira et al. 2017, HERO ID 5060134).	Medium	3082492

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Vital capacity Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; This study estimated cumulative asbestos exposure for the period 1938-1986 within a sample (n=103) of Swedish car and bus mechanics utilizing a semi-quantitative Asbestos Index (AI) constructed from historical and literature -based measured exposures along with exposure scenarios derived from employee self-administered questionnaires and standardized personal work history interviews. The relationship between estimated mean cumulative asbestos exposure, and exposure as represented by years of employment, with spirometry lung function parameters of vital capacity (VC) forced volume in 1 second (FEV1), total lung capacity (TLC), percent vital capacity (CV%) and transfer factor (TLco) was investigated.	PCM Occupational estimated The estimated mean cumulative asbestos exposure was 2.6 f mL * year (0.1 -11.6 f mL * year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Results (Table 2) indicated a weak, non-significant relationship between cumulative asbestos exposure and CV% (Table 2: CV% slope (beta) : 1.08)	Medium	3081596

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Transfer factor (TLco) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; This study estimated cumulative asbestos exposure for the period 1938-1986 within a sample (n=103) of Swedish car and bus mechanics utilizing a semi-quantitative Asbestos Index (AI) constructed from historical and literature -based measured exposures along with exposure scenarios derived from employee self-administered questionnaires and standardized personal work history interviews. The relationship between estimated mean cumulative asbestos exposure, and exposure as represented by years of employment, with spirometry lung function parameters of vital capacity (VC) forced volume in 1 second (FEV1), total lung capacity (TLC), percent vital capacity (CV%) and transfer factor (TLco) was investigated.	PCM Occupational estimated The estimated mean cumulative asbestos exposure was 2.6 f mL * year (0.1 -11.6 f mL * year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Results (Table 2) indicated a statistically significant decrease in transfer factor (TLco) associated with cumulative asbestos exposure (Table 2: TLco slope (beta): -0.16; p< 0.01).	Medium	3081596
Respiratory system cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Laryngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,526 white male asbestos textile plant workers in South Carolina, 1940-2001, attained age <50 - >80	PCM Air (area level), Occupational Chrysotile asbestos, range of cumulative exposure (fiber-year/mL), <1.5 - >240.; Asbestos - Chrysotile (serpentine): 12001-29-5	Significantly increased risk of lung cancer mortality per 10 fiber-year/mL increase in cumulative asbestos exposure for attained age <65 years. ERR (95% CI) = 0.053 (0.023, 0.124). Comments: Figure 2 provides predicted relative risks using two-stage clonal expansion models.	Medium	2238696
lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,526 white male asbestos textile plant workers in South Carolina, 1940-2001, attained age <50 - >80	PCM Air (area level), Occupational Chrysotile asbestos, range of cumulative exposure (fiber-year/mL), <1.5 - >240.; Asbestos - Chrysotile (serpentine): 12001-29-5	Significantly increased risk of lung cancer mortality per 10 fiber-year/mL increase in cumulative asbestos exposure for attained age <65 years. ERR (95% CI) = 0.053 (0.023, 0.124). Comments: Figure 2 provides predicted relative risks using two-stage clonal expansion models.	Medium	2238696
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/ cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/ cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/ cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290
The endpoints measured in this study were the following lung function parameters measured with spirometry: FVC, FEV1, FEV1/FVC, PEF, MEF50, and MEF25. Study Design: Case-Control, Cross-Sectional	Occupational; PESS included in study; Female; 35 non-smoking female textile factory workers in Barcelona, 20-62 years	PCM Air (personal level), Air (indoor), Occupational Asbestos, chrysotile, Cumulative index mean = 106.5 +/- 65.9 fibres-yr/ cm3 (range: 2.5-221.2); Asbestos - Chrysotile (serpentine): 12001-29-5	The primary results show that the exposed subjects had significantly lower FVC and FEV 1 compared with a matched control population. The authors showed marked decreases in PEF, MEF5o% and MEF25% . A significant correlation was established between FVC, FEV1, PEF, MEF5o% and MEF25% , and the duration of the asbestos exposure.	Medium	3083290
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 26/4OR: 6.3 (95% CI: 2.0-21.9) Comments: Table 4. Information for <10um, log10 (f/g) 6-6.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 18/1OR: 12.0 (95% CI: 1.8-259) Comments: Table 4. >/= 10um, log10 (f/g) 5.5-6. Chrysotile exposure.	Medium	3082405
Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 5.4 (95% CI: 1.7-19.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 3.8 (95% CI: 1.2-13.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6. >/=10um length	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/15OR= 16.5 (95% CI: 4.6-70.1) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 44/6OR= 5.9 (95% CI: 2.3-16.4) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 26/4OR: 6.3 (95% CI: 2.0-21.9) Comments: Table 4. Information for <10um, log10 (f/g) 6-6.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 18/1OR: 12.0 (95% CI: 1.8-259) Comments: Table 4. >/= 10um, log10 (f/g) 5.5-6. Chrysotile exposure.	Medium	3082405
Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 5.4 (95% CI: 1.7-19.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 3.8 (95% CI: 1.2-13.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6. >/=10um length	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/15OR= 16.5 (95% CI: 4.6-70.1) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 44/6OR= 5.9 (95% CI: 2.3-16.4) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 26/4OR: 6.3 (95% CI: 2.0-21.9) Comments: Table 4. Information for <10um, log10 (f/g) 6-6.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 18/1OR: 12.0 (95% CI: 1.8-259) Comments: Table 4. >/= 10um, log10 (f/g) 5.5-6. Chrysotile exposure.	Medium	3082405
Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 5.4 (95% CI: 1.7-19.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 3.8 (95% CI: 1.2-13.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6. >/=10um length	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 26/4OR: 6.3 (95% CI: 2.0-21.9) Comments: Table 4. Information for <10um, log10 (f/g) 6-6.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 18/1OR: 12.0 (95% CI: 1.8-259) Comments: Table 4. >/= 10um, log10 (f/g) 5.5-6. Chrysotile exposure.	Medium	3082405
Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
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Epidemiology Extraction Table: Lung/Respiratory

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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Epidemiology Extraction Table: Lung/Respiratory

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Epidemiology Extraction Table: Lung/Respiratory

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Epidemiology Extraction Table: Lung/Respiratory

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Epidemiology Extraction Table: Lung/Respiratory

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Epidemiology Extraction Table: Lung/Respiratory

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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/15OR= 16.5 (95% CI: 4.6-70.1) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 26/4OR: 6.3 (95% CI: 2.0-21.9) Comments: Table 4. Information for <10um, log10 (f/g) 6-6.5. Chrysotile exposure.	Medium	3082405

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Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
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Chrysotile fibers measured by TEM. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Chrysotile <10um: b= 2.70 (SE=0.54), p-value=0.00001 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 5.4 (95% CI: 1.7-19.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 25/4OR= 3.8 (95% CI: 1.2-13.2) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6. >/=10um length	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/15OR= 16.5 (95% CI: 4.6-70.1) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 20/1OR= 27.0 (95% CI: 3.9-537) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 44/6OR= 5.9 (95% CI: 2.3-16.4) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Association of histological grade of asbestosis with asbestos concentrations in lung tissue; Relation between pleural plaque dimensions and asbestos content of lungs Study Design: Cohort (Retrospective), Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Patients with diseases suspected to have asbestos-related etiology who were seen at the same medical centers: (1986), Raleigh-Durham, NC, 110 patients in exposed group (30 with asbestosis, all males; 48 with pleural plaques, 46 males) and 20 in the referent group (majority males).	LM, SEM Biomarkers from lung tissues Asbestos bodies/g averaged 307,000 (measured by SEM) in asbestosis patients and 1700 in pleural plaques patients. Majority amosite or crocidolite, some anthophyllite, tremolite, actinolite, and chrysotile.; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Anthophyllite: 17068-78-9, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Chrysotile (serpentine): 12001-29-5	There was a significant correlation between grade of asbestosis and total fiber count by SEM (r =0.57).	Low	3083350
Association of histological grade of asbestosis with asbestos concentrations in lung tissue; Relation between pleural plaque dimensions and asbestos content of lungs Study Design: Cohort (Retrospective), Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Patients with diseases suspected to have asbestos-related etiology who were seen at the same medical centers: (1986), Raleigh-Durham, NC, 110 patients in exposed group (30 with asbestosis, all males; 48 with pleural plaques, 46 males) and 20 in the referent group (majority males).	LM, SEM Biomarkers from lung tissues Asbestos bodies/g averaged 307,000 (measured by SEM) in asbestosis patients and 1700 in pleural plaques patients. Majority amosite or crocidolite, some anthophyllite, tremolite, actinolite, and chrysotile.; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Anthophyllite: 17068-78-9, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Chrysotile (serpentine): 12001-29-5	There was a significant correlation between grade of asbestosis and total fiber count by SEM (r =0.57).	Low	3083350

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung changes consistent with asbestos exposure evaluated from imaging: pleural and interstitial changes in Rohs et al., RefID 709486 using X-rays; pleural and parenchymal changes in Lockey et al., RefID 3014803 using HRCT/CT. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Follow-up study participants from a 1980 cohort of 512 workers (431 living) at a plant processing asbestos-contaminated vermiculite: 280 at the 25-year follow-up, 191 with HRCT/CT and 115 with X-rays at the 30-year follow-up.	PCM Air (personal level), Air (area level) Rohs et al., RefID 709486 estimated mean cumulative fiber exposure (CFE) through 1980 to be 2.48 fiber/cc-years. Using refined methods (added measures and an updated JEM) Lockey et al., 3014803 estimated mean CFE to be 6.98 fibers/cc-years through 1980, increasing to 7.5 fiber/cc-years through 2001. Relevant fibers included libby amphibole, wincherite, tremolite, and richterite; Asbestos - Tremolite: 14567-73-8, Winchite: 12425-92-2-Asbestos-Richterite: 17068-76-7-Asbestos- Libby amphibole: 1318-09-8	Lockey et al., RefID 3014803: Adjusted risk ratio for parenchymal changes among all participants:<0.45 fiber-years/cm^ 3 = (reference)0.45-<1.35 fiber-years/cm^ 3 = 3.5 (95% CI: 1.0-11.6), p<0.051.35-<10 fiber-years/cm^ 3 = 5.8 (95% CI: 2.0-17.3), p<0.01>=10 fiber-years/cm^ 3 = 4.0 (95% CI: 1.2-12.8), p<0.05 Comments: Numerous sensitivity analyses suggest findings were robust.	High	709486
Lung changes consistent with asbestos exposure evaluated from imaging: pleural and interstitial changes in Rohs et al., RefID 709486 using X-rays; pleural and parenchymal changes in Lockey et al., RefID 3014803 using HRCT/CT. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Follow-up study participants from a 1980 cohort of 512 workers (431 living) at a plant processing asbestos-contaminated vermiculite: 280 at the 25-year follow-up, 191 with HRCT/CT and 115 with X-rays at the 30-year follow-up.	PCM Air (personal level), Air (area level) Rohs et al., RefID 709486 estimated mean cumulative fiber exposure (CFE) through 1980 to be 2.48 fiber/cc-years. Using refined methods (added measures and an updated JEM) Lockey et al., 3014803 estimated mean CFE to be 6.98 fibers/cc-years through 1980, increasing to 7.5 fiber/cc-years through 2001. Relevant fibers included libby amphibole, wincherite, tremolite, and richterite; Asbestos - Tremolite: 14567-73-8, Winchite: 12425-92-2-Asbestos-Richterite: 17068-76-7-Asbestos- Libby amphibole: 1318-09-8	Lockey et al., RefID 3014803: Unadjusted risk ratio for pleural changes among all participants:<0.15 fiber-years/cm^ 3 = (reference);0.15-<0.45 fiber-years/cm^ 3 = 4.2 (95% CI: 1.6-11.3), p<0.01;0.45-<1.35 fiber-years/cm^ 3 = 5.2 (95% CI: 1.9-13.9), p<0.001;1.35-<10 fiber-years/cm^ 3 = 8.7 (95% CI: 3.4-22.4), p<0.001;>=10 fiber-years/cm^ 3 = 8.6 (95% CI: 3.4-22.1), p<0.001 Comments: Numerous sensitivity analyses suggest findings were robust.	High	709486

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality assessed by ICD codes on death records (Ferrante et al., 2020, HEROID: 6861719). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (2020), Italy, 953 subjects (all male) (Ferrante et al., 2020, HEROID: 6861719).	PCM Air (personal level), Air (area level), Occupational Cumulative exposure concentrations were broken into tertiles (Q1: <27 f/mL-y; Q2: 27-345 f/mL/y; Q3: >=346 f/mL-y) (Ferrante et al., 2020, HEROID: 6861719). Only chrysotile reported.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed (Ferrante et al., 2020, HEROID: 6861719).	Medium	178
Mesothelioma incidence assessed with regional mesothelioma registry (Ferrante et al., 2020, HEROID: 6861719). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (2020), Italy, 953 subjects (all male) (Ferrante et al., 2020, HEROID: 6861719).	PCM Air (personal level), Air (area level), Occupational Cumulative exposure concentrations were broken into tertiles (Q1: <27 f/mL-y; Q2: 27-345 f/mL/y; Q3: >=346 f/mL-y) (Ferrante et al., 2020, HEROID: 6861719). Only chrysotile reported.; Asbestos - Chrysotile (serpentine): 12001-29-5	Subjects in Q3 of exposure experience an increased risk of mesothelioma malignancy occurrence (RR, 95% CI=18.0,2.0-164.8) (Ferrante et al., 2020, HEROID: 6861719). Test for trend was significant, p=0.004. No significant findings for subjects in Q2 of exposure.	Medium	178
FVC, FEV1 measured by spirometry Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).;	Outcomes reported in regression coefficient b (95% CI)Linear regression models for % FEV1 found statistically significant associations for the following activities (ever participated/never participated): Playing in or watching games at the downtown ballfields ('Ball'): 3.14 (0.42, 5.87)Playing /digging in the yard ('Dig'): -3.21(-5.87, -0.55)No significant associations were found for % FVC or % FEV1/FVC. Linear regression models for % FEV1 found statistically significant associations for the following activities (frequency of participation): Playing in or watching games at the downtown ballfields ('Ball'): 2.56 (0.70, 4.41)No significant associations were found for % FVC or % FEV1/FVC. Comments: Tables S1 and S2		6866570

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FVC, FEV1 measured by spirometry Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).;	Outcomes reported in regression coefficient b (95% CI)Linear regression models for % FEV1 found statistically significant associations for the following activities (ever participated/never participated): Playing in or watching games at the downtown ballfields ('Ball'): 3.14 (0.42, 5.87)Playing /digging in the yard ('Dig'): -3.21(-5.87, -0.55)No significant associations were found for % FVC or % FEV1/FVC. Linear regression models for % FEV1 found statistically significant associations for the following activities (frequency of participation): Playing in or watching games at the downtown ballfields ('Ball'): 2.56 (0.70, 4.41)No significant associations were found for % FVC or % FEV1/FVC. Comments: Tables S1 and S2		6866570
FVC, FEV1 measured by spirometry Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).;	Outcomes reported in regression coefficient b (95% CI)Linear regression models for % FEV1 found statistically significant associations for the following activities (ever participated/never participated): Playing in or watching games at the downtown ballfields ('Ball'): 3.14 (0.42, 5.87)Playing /digging in the yard ('Dig'): -3.21(-5.87, -0.55)No significant associations were found for % FVC or % FEV1/FVC. Linear regression models for % FEV1 found statistically significant associations for the following activities (frequency of participation): Playing in or watching games at the downtown ballfields ('Ball'): 2.56 (0.70, 4.41)No significant associations were found for % FVC or % FEV1/FVC. Comments: Tables S1 and S2		6866570

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Presence of pleuritic chest pain, regular cough, shortness of breath, or wheezing/ whistling in the chest assessed by participant report. Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).; Asbestos- Libby amphibole: 1318-09-8	Cumulative LAA exposure was significantly associated with shortness of breath (adjusted odds ratio = 1.12, 95% CI: 1.01 - 1.25 per doubling of exposure). Engaging in recreational activities near Rainy Creek Road was significantly associated with pleuritic chest pain (adjusted odds ratio = 1.9, 95% CI: 1.1 " 3.4) and shortness of breath (adjusted odds ratio = 2.8, 95% CI: 1.5 " 5.2). Frequently heating vermiculite ore to make it pop were also significantly associated with pleuritic chest pain (adjusted odds ratio = 2.7, 95% CI: 1.1 " 7.0). Additional associations between qualitative exposure for each activity and respiratory symptoms are shown in Table 3, and associations between sometimes and frequently participating in activities and each symptom is shown in Table 4.	Uninformative	6866570
Presence of pleuritic chest pain, regular cough, shortness of breath, or wheezing/ whistling in the chest assessed by participant report. Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).; Asbestos- Libby amphibole: 1318-09-8	Cumulative LAA exposure was significantly associated with shortness of breath (adjusted odds ratio = 1.12, 95% CI: 1.01 - 1.25 per doubling of exposure). Engaging in recreational activities near Rainy Creek Road was significantly associated with pleuritic chest pain (adjusted odds ratio = 1.9, 95% CI: 1.1 " 3.4) and shortness of breath (adjusted odds ratio = 2.8, 95% CI: 1.5 " 5.2). Frequently heating vermiculite ore to make it pop were also significantly associated with pleuritic chest pain (adjusted odds ratio = 2.7, 95% CI: 1.1 " 7.0). Additional associations between qualitative exposure for each activity and respiratory symptoms are shown in Table 3, and associations between sometimes and frequently participating in activities and each symptom is shown in Table 4.	Uninformative	6866570

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Presence of pleuritic chest pain, regular cough, shortness of breath, or wheezing/ whistling in the chest assessed by participant report. Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).; Asbestos- Libby amphibole: 1318-09-8	Cumulative LAA exposure was significantly associated with shortness of breath (adjusted odds ratio = 1.12, 95% CI: 1.01 - 1.25 per doubling of exposure). Engaging in recreational activities near Rainy Creek Road was significantly associated with pleuritic chest pain (adjusted odds ratio = 1.9, 95% CI: 1.1 " 3.4) and shortness of breath (adjusted odds ratio = 2.8, 95% CI: 1.5 " 5.2). Frequently heating vermiculite ore to make it pop were also significantly associated with pleuritic chest pain (adjusted odds ratio = 2.7, 95% CI: 1.1 " 7.0). Additional associations between qualitative exposure for each activity and respiratory symptoms are shown in Table 3, and associations between sometimes and frequently participating in activities and each symptom is shown in Table 4.	Uninformative	6866570
Presence of pleuritic chest pain, regular cough, shortness of breath, or wheezing/ whistling in the chest assessed by participant report. Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).; Asbestos- Libby amphibole: 1318-09-8	Cumulative LAA exposure was significantly associated with shortness of breath (adjusted odds ratio = 1.12, 95% CI: 1.01 - 1.25 per doubling of exposure). Engaging in recreational activities near Rainy Creek Road was significantly associated with pleuritic chest pain (adjusted odds ratio = 1.9, 95% CI: 1.1 " 3.4) and shortness of breath (adjusted odds ratio = 2.8, 95% CI: 1.5 " 5.2). Frequently heating vermiculite ore to make it pop were also significantly associated with pleuritic chest pain (adjusted odds ratio = 2.7, 95% CI: 1.1 " 7.0). Additional associations between qualitative exposure for each activity and respiratory symptoms are shown in Table 3, and associations between sometimes and frequently participating in activities and each symptom is shown in Table 4.	Uninformative	6866570

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural or interstitial changes assessed with Xray and HRCT scans Study Design: Cohort (Retrospective)	Adults or general, Occupational, Children (2-18y); PESS included in study; Female, Male; Young adults that grew up in Libby, MT and had childhood exposure to LAA: (2017), Montana, USA, 312 participants (54% female)	exposure was estimated based on participant report of engaging in certain activities associated with LAA exposure estimated based on participant report of engaging in certain activities during childhood The median cumulative exposure across all activities was 4.99 f/cc - months (range: 0.01 - 114.3). Of the individual activities, the median cumulative exposure was highest for playing in or around piles (6.54 f/cc - months).;	No statistically significant associations were observed (no statistical analyses were performed because no pleural or interstitial changes were observed).		6866570

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 66 hospital patients with diagnosed mesothelioma and lung tissues samples, and 66 matched controls that were sourced from hospital patients treated by surgical lung resection for a cause different from mesothelioma as well as the general population from seven clinical centers in West Germany between January 1, 1988 and December 31, 1991.	TEM Biomonitoring Biomonitoring matrix: lung tissue; Asbestos exposure. Median concentrations of fibers longer than 5 μm for males with mesothelioma of 0.33 f/μg dry weight for amphibole fibers, 0.02 f/μg dry weight for chrysotile fibers; median concentrations of fibers longer than 5 μm for females with mesothelioma of 0.31 f/μg dry weight for amphibole fibers, below the detection limit for chrysotile fibers. Median concentrations of fibers longer than 5 μm for males without mesothelioma of 0.03 f/μg dry weight for amphibole fibers, below the detection limit for chrysotile fibers; median concentrations of fibers longer than 5 μm for females with mesothelioma of 0.04 f/μg dry weight for amphibole fibers, 0.02 f/μg dry weight for chrysotile fibers.; Asbestos - Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Mesothelioma diagnosis positively associated with increasing concentrations of total amphibole fibers longer than 5 μm in the lung: OR 4.5 (1.1-17.9) comparing the 0.1-<0.2 f/μg group to the reference group of <0.05 f/μg; OR 10.3 (2.6-40.2) comparing the 0.2-<0.5 f/μg group to the reference group of <0.05 f/μg; OR 98.7 (11.8-826) comparing the>=0.5 f/μg group to the reference group of <0.05 f/μg; no significant association was observed between the 0.05-<0.1 f/μg concentration of total amphibole fibers longer than 5 μm in the lung group and the reference group of <0.05 f/μg. Mesothelioma diagnosis was not significantly associated with increased concentrations of chrysotile fibers longer than 5 μm in the lung, both with and without adjustment for the concentration of amphibole fibers longer than 5 μm in the lung. Comments: OR estimates are very imprecise (with very large 95% confidence intervals) due to very small cells in the analysis, including some exposure/outcome groups with five or fewer participants in them.	Medium	3081025

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Vital capacity (VC) Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 115 male retirees from an acrylic and polyester fiber plant in Sardinia, Italy, recruited 2017-2019, mean age was 65.5 y	Retrospective assessment based on professional judgment Occupational This study did not directly measure exposure Asbestos, average cumulative exposure was 4.51 f/mL-years (95% CI 3.40"5.61); Asbestos - Not specified: 1332-21-4	Respiratory function parameters did not vary in relation to the exposure estimates, nor to CT scan results. Risk of interstitial fibrosis showed a significant upward trend (Wald test for trend = 2.62, p = 0.009) with cumulative exposure to asbestos; risk associated with 5.26 fibers/mL-years or more, was 8-fold (95% CI 1.18"54.5).	Uninformative	6868480
Forced expiratory volume in 1 second (FEV1) Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 115 male retirees from an acrylic and polyester fiber plant in Sardinia, Italy, recruited 2017-2019, mean age was 65.5 y	Retrospective assessment based on professional judgment Occupational This study did not directly measure exposure Asbestos, average cumulative exposure was 4.51 f/mL-years (95% CI 3.40"5.61); Asbestos - Not specified: 1332-21-4	Respiratory function parameters did not vary in relation to the exposure estimates, nor to CT scan results. Risk of interstitial fibrosis showed a significant upward trend (Wald test for trend = 2.62, p = 0.009) with cumulative exposure to asbestos; risk associated with 5.26 fibers/mL-years or more, was 8-fold (95% CI 1.18"54.5).	Uninformative	6868480
Residual volume (RV) Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 115 male retirees from an acrylic and polyester fiber plant in Sardinia, Italy, recruited 2017-2019, mean age was 65.5 y	Retrospective assessment based on professional judgment Occupational This study did not directly measure exposure Asbestos, average cumulative exposure was 4.51 f/mL-years (95% CI 3.40"5.61); Asbestos - Not specified: 1332-21-4	Respiratory function parameters did not vary in relation to the exposure estimates, nor to CT scan results. Risk of interstitial fibrosis showed a significant upward trend (Wald test for trend = 2.62, p = 0.009) with cumulative exposure to asbestos; risk associated with 5.26 fibers/mL-years or more, was 8-fold (95% CI 1.18"54.5).	Uninformative	6868480
Diffusion lung capacity test with carbon monoxide (DLCO) Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 115 male retirees from an acrylic and polyester fiber plant in Sardinia, Italy, recruited 2017-2019, mean age was 65.5 y	Retrospective assessment based on professional judgment Occupational This study did not directly measure exposure Asbestos, average cumulative exposure was 4.51 f/mL-years (95% CI 3.40"5.61); Asbestos - Not specified: 1332-21-4	Respiratory function parameters did not vary in relation to the exposure estimates, nor to CT scan results. Risk of interstitial fibrosis showed a significant upward trend (Wald test for trend = 2.62, p = 0.009) with cumulative exposure to asbestos; risk associated with 5.26 fibers/mL-years or more, was 8-fold (95% CI 1.18"54.5).	Uninformative	6868480

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
High-resolution computerized tomography (HRCT) scan-Pleural Plaques report Study Design: Cross-Sectional	Occupational; PESS included in study; Male; 115 male retirees from an acrylic and polyester fiber plant in Sardinia, Italy, recruited 2017-2019, mean age was 65.5 y	Retrospective assessment based on professional judgment Occupational This study did not directly measure exposure Asbestos, average cumulative exposure was 4.51 f/mL-years (95% CI 3.40"5.61); Asbestos - Not specified: 1332-21-4	Respiratory function parameters did not vary in relation to the exposure estimates, nor to CT scan results. Risk of interstitial fibrosis showed a significant upward trend (Wald test for trend = 2.62, p = 0.009) with cumulative exposure to asbestos; risk associated with 5.26 fibers/mL-years or more, was 8-fold (95% CI 1.18"54.5).	Medium	6868480
Carbon monoxide diffusing capacity adjusted for alveolar volume (DLCO/VA)	Adults or general, Occupational; PESS included in study; Male; 207 male electrical plant workers, Germany	Job exposure matrix JEM Mean: 49.0 fiber/cc x years (SD = 114.2); Asbestos - Not specified: 1332-21-4	Beta: -0.59 (95% CI: -1.09, -0.08)p-value = 0.02 Comments: There were no statistically significant findings between lung function and asbestos exposure. Table 3- Time since end of exposure variable (in years).	Medium	3864418
Lung cancer	Occupational; PESS included in study; Male; Canadian petroleum workers cohort (1964-1994), United States, 17216 male workers.	Air (personal level) Asbestos, fibres/cc-years, low tertile: 0-0.014; medium tertile: 0.014"0.170; High tertile: >0.170.; Asbestos - Not specified: 1332-21-4	SIRs for asbestos level in tertiles were not statistically significant: SIR (<0"0.014 fibres/cc-years) = 0.40, 95% CI: 0.05 to 1.43. SIR (>0.014"0.170 fibres/cc-years) = 0.76, 95% CI: 0.25 to 1.78. SIR (>1.70 fibres/cc-years) = 1.53, 95% CI: 0.79 to 2.68.SIR for all asbestos exposed subjects was not statistically significant: SIR = 0.98, 95% CI: 0.59 to 1.53.In continuous exposure level analysis, Lung cancer relative risk exceeds 1 when exposure level about 17 fibres/cc-years, and all 95% CIs include null value. Comments: Table 2; 3rd paragraph in page 880 - description of Fig 1.	Medium	2558775

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Vital capacity. Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; Adults working in a dolomite mine.	Air (personal level) Total dust median 2.8 mg/m3 (in text - results paragraph 2).Tremolite asbestos range of maximum fiber count between departments: <0.03 - 0.14 fibres/mL; Asbestos - Tremolite: 14567-73-8	A dose-response relationship was found between decreases in vital capacity and exposure to dust containing tremolite asbestos. A similar, though less clear, association was found between exposure to dust and FEV1.	Medium	2079021
Lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 1.71 (95% CI 0.98"2.78). The age and smoking-adjusted HR for mortality was 1.08 (0.85"1.38) per 10-unit increase in fiber-years of exposure, and 0.89 (0.83"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Progression of irregular lung opacities or pleural abnormalities in chest X-rays Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; 1454 white and mixed-race male South African asbestos mine and mill workers from a 1970-75 baseline study that conducted X-rays, if they were identified as having had a subsequent X-ray a minimum of 2 years later (2000)	PCM Konimeter, thermal precipitator Air (area level) Cumulative fiber exposure before the baseline X-ray averaged 23.2 fiber-years (over a mean of 4.2 years) in men with no subsequent exposure after baseline, and 38.4 fiber-years (mean 6.7 years) among men with subsequent exposure. After baseline, among men who did not discontinue asbestos work, the cumulative average was 6.2 fiber-years (mean 4.5 years). South African mines were predominantly crocidolite and amosite asbestos.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5	The incidence of new irregular lung opacities and mean annual changes in irregular lung opacities were similar among men with vs. without continued exposure to asbestos after the baseline X-ray. Measures of asbestos exposure before and after baseline were both positively and significantly associated with opacity progression rate/year. Only significant coefficients were retained by the stepwise regression model. For subjects exposed after baseline, the beta (SE) was 0.016 (0.005) for years of asbestos exposure through baseline, and 0.016 (0.005) for fiber-years after baseline. For subjects not exposed after baseline, the beta (SE) was 0.004 (0.001) for years of asbestos exposure through baseline. The authors speculated that once a dose of asbestos sufficient to initiate disease has been retained, disease may continue to progress regardless of continued exposure. Comments: It is uncertain to what extent irregular opacities may represent asbestosis (see Sluis-Cremer et al 1989 3082734). The follow-up X-rays were unrelated to the study, and no indications for second X-rays were described. It cannot be ascertained to what extent the study sample is representative of exposure-outcome associations or is selective. Mean fiber concentrations for South African mines over different time periods described in Sluis-Cremer et al 1990, 3082523, along with methods used to estimate concentrations. The validity and precision, particularly of early exposure estimates, is uncertain.	Medium	3082687

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis (lung autopsy, histological) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 807 deceased white and mixed-race male South African asbestos mine workers whose lungs were sent to a government agency for autopsy related to workers compensation	PCM Konimeter, thermal precipitator (earlier years) Air (area level) Mean (SD) exposure measures: years of exposure = 10.6 (9.2); average fiber concentration = 17.7 (25.8); cumulative fiber years of exposure = 176.5 (307.8); years of residence in mining areas with environmental exposure = 30.4 (14.0). See Table 1.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	The primary aim of this study was to evaluate whether there seems to be an asbestos exposure threshold below which asbestosis may not occur. When exposure was expressed as average fiber concentration, asbestosis cases were identified as estimated exposures below 2 fibers per ml; prevalence increased with residence time. When exposure was expressed as cumulative fiber-years, no asbestosis was found at autopsy up to 2 fiber-years, even after 31-45 years of residence time. However, asbestosis was found in the group exposed to >2-5 fiber-years with as few as <=15 years of residence time. Stepwise logistic regression models for the full cohort found the following exposure variables to be significantly associated with probability of asbestosis: beta (SE) for years of exposure = 0.167 (0.152), for residence time = 0.039 (0.008), and average fibers/mL concentration = 0.010 (0.004). A limitation of this study is that the precision and validity of exposure estimates, as well as comparability over time, is uncertain given temporal changes in measurement methods. Comments: Uncertain validity of estimates of exposure, particularly for earlier time periods.	Medium	3082523
Mesothelioma cases	Occupational; PESS included in study; Female, Male; Lithuanian asbestos-cement workers, employed at least three months	Air (area level) Chrysotile asbestos fibers and dust; Asbestos - Chrysotile (serpentine): 12001-29-5	WomenSIR: 20.1 (2.9, 142.3) Comments: There was only one mesothelioma case in this cohort in a female participant	Low	3080235
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2007), United States, 1,672 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for asbestosis mortality with a 15-year exposure lag:0.0-49.9 fiber/cc-years = 37.3 (7.5-122.3);50.0-249.9 fiber/cc-years = 212.6 (91.6-433.2);>=250.0 fiber/cc-years = 749.1 (373.0-1367.8); Comments: Sullivan et al. 2007 (HERO ID: 709497), Table 3	Medium	709497
Lung cancer mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2010), United States, 1,662 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for lung cancer mortality with 15-year lag:0.00-4.49 fiber/cc-years = 1.35 (0.80-1.33);4.50-22.90 fiber/cc-years = 1.53 (0.97-2.30);23.00-99.00 fiber/cc-years = 1.81 (1.16-2.69);100.00+ fiber/cc-years = 1.99 (1.27-2.96);(All reported in text as statistically significant).Regression estimate (SE) for lung cancer mortality = 0.11 (0.025).Hazard ratio (95% CI) for all cause mortality = 1.12 (1.06-1.17). Comments: Moolgavkar et al. 2010 (HERO ID: 709457), Table II and IV.	Medium	709497
Lung cancer mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2010), United States, 1,662 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for lung cancer mortality with 15-year lag:0.00-4.49 fiber/cc-years = 1.35 (0.80-1.33);4.50-22.90 fiber/cc-years = 1.53 (0.97-2.30);23.00-99.00 fiber/cc-years = 1.81 (1.16-2.69);100.00+ fiber/cc-years = 1.99 (1.27-2.96);(All reported in text as statistically significant).Regression estimate (SE) for lung cancer mortality = 0.11 (0.025).Hazard ratio (95% CI) for all cause mortality = 1.12 (1.06-1.17). Comments: Moolgavkar et al. 2010 (HERO ID: 709457), Table II and IV.	Medium	709497

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory disease mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2010), United States, 1,662 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for non-malignant respiratory disease mortality with 15-year lag:0.00-4.49 fiber/cc-years = 1.70 (1.00-2.68);4.50-22.90 fiber/cc-years = 1.97 (1.29-2.86);23.00-99.00 fiber/cc-years = 2.18 (1.44-3.18);100.00+ fiber/cc-years = 3.44 (2.46-4.68);(All reported in text as statistically significant).Regression estimate (SE) for non-malignant respiratory disease mortality = 0.13 (0.021).Hazard ratio (95% CI) for non-malignant respiratory disease mortality = 1.14 (1.09-1.18). Comments: Moolgavkar et al. 2010 (HERO ID: 709457), Table II and IV.	Medium	709497
Mesothelioma deaths. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Other, Both male and female; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	Males: 3 deaths, SMR = 2,680 (95% CI: 553-7,832)Females: 3 deaths, SMR = 7,207 (95% CI: 1,031-14,612)	Medium	3080436
Mesothelioma deaths. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Other, Both male and female; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	Males: 3 deaths, SMR = 2,680 (95% CI: 553-7,832)Females: 3 deaths, SMR = 7,207 (95% CI: 1,031-14,612)	Medium	3080436
Respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 789 (482-1219) Comments: Information for males and females. Table 6 and 7	Medium	3080436
FVC, FEV1, FEV1/FVC ratio, and forced expiratory flow between 25% and 75% of FVC (FEF25-75%) measured using a calibrated pneumotachograph in Multispiro System Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos mining and milling company: Group 3 taking place in Canabrava mine during 1977-1980, and Group 4 taking place in Canabrava mine during after 1981.	PCM Air (area level), Occupational Mean cumulative exposures were as followed: "Group III: 7.6 ± 5.4 fibres-cc-years; Group IV: 3.6 ± 4.4 fibres-cc-years" Majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Spirotmeric values were lower in patients with reported detection of pleural plaques from Thin-section CT (Table 4).Group 3: FVC, L= 3.18 +/- 0.29; FVC, % = 83.3 +/- 8.9; FEV1, L= 2.45 +/- 0.40; FEV1, % = 81.2 +/- 13.1All $p<0.05$ "when comparing those CXR(-) Thin-section CT (+) versus CXR(-) Thin-section CT(-)." Comments: Results only reflect findings from Groups 3 and 4 as exposure in these groups were measured with PCM. Exposure: Group I: 110.9 ± 140.3 fibres-cc-years; Group II: 44.1 ± 49.4 fibres-cc-years; in addition to chyrostile, group 1 was also exposed to tremolite.	Medium	3077807

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis determined by two thoracic radiologists via Thin-section CT images or by three radiologists via CXR. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos mining and milling company: Group 3 taking place in Canabrava mine during 1977-1980, and Group 4 taking place in Canabrava mine during after 1981.	PCM Air (area level), Occupational Mean cumulative exposures were as followed: "Group III: 7.6 ± 5.4 fibres-cc-years; Group IV: 3.6 ± 4.4 fibres-cc-years" Majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	overall indicence rate from CXR= 1.99 cases per 100,000 person-years; Group 1 (n=1), Group 2 (n=12), Group 3 (n=6), and Group 4 (n=1).incidence rate ratio for Group 2 (v. Group 1)= 1.08 (0.14"8.36)incidence rate ratio for Group 3 (v. Group 1)= 0.76 (0.09"6.33)incidence rate ratio for Group 4 (v. Group 1)= 0.84 (0.05"13.49) Comments: Results came from longitudinal analyses; Results only reflect findings from Groups 3 and 4 as exposure in these groups were measured with PCM. Please note that incidence rate ratios use a reference group (Group 1) that did not have exposure measured with PCM. Exposure: Group I: 110.9 ± 140.3 fibres-cc-years; Group II: 44.1 ± 49.4 fibres-cc-years; in addition to chyrostile, group 1 was also exposed to tremolite.	Medium	3077807
Pleural abnormalities determined by two thoracic radiologists via Thin-section CT images or by three radiologists via CXR. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos mining and milling company: Group 3 taking place in Canabrava mine during 1977-1980, and Group 4 taking place in Canabrava mine during after 1981.	PCM Air (area level), Occupational Mean cumulative exposures were as followed: "Group III: 7.6 ± 5.4 fibres-cc-years; Group IV: 3.6 ± 4.4 fibres-cc-years" Majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Odds of developing pleural plaques increases with age (Thin-section CT: 1.14 (1.12"1.17); CXR: 1.10 (1.05"1.15)) and frequency of cigarette smoking (Thin-section CT: 1.01 (1.00"1.02); CXR: 1.01 (1.00"1.02)). Compared to never-smokers, current smokers are more likely to develop pleural plaques (Thin-section CT: 2.59 (1.50"4.46); CXR: 2.51 (0.76"8.34)). Compared to Group 1 (who were exposed to the highest level of asbestos), all other groups had significantly lower odds of developing pleural plaques.overall incidence rate from Thin-section CT= 1.75 cases per 100,000 person-years; Group 1 (n=5), Group 2 (n=10), and Group 3 (n=3)incidence rate ratio for Group 3 (v. Group 1)= 0.08 (0.02"0.36) Comments: Results for incidence came from longitudinal analyses; Results only reflect findings from Groups 3 and 4 as exposure in these groups were measured with PCM. Please note that incidence rate ratios use a reference group (Group 1) that did not have exposure measured with PCM. Exposure: Group I: 110.9 ± 140.3 fibres-cc-years; Group II: 44.1 ± 49.4 fibres-cc-years; in addition to chyrostile, group 1 was also exposed to tremolite.	Medium	3077807

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Interstitial abnormalities determined by two thoracic radiologists via Thin-section CT images or by three radiologists via CXR. Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos mining and milling company: Group 3 taking place in Canabrava mine during 1977-1980, and Group 4 taking place in Canabrava mine during after 1981.	PCM Air (area level), Occupational Mean cumulative exposures were as followed: "Group III: 7.6 ± 5.4 fibres-cc-years; Group IV: 3.6 ± 4.4 fibres-cc-years" Majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Odds of developing interstitial abnormalities increases with age (Thin-section CT: 1.17 (1.13"1.22); CXR: 1.08 (1.05"1.10)) and frequency of cigarette smoking (Thin-section CT: 1.01 (1.00"1.02); CXR: 1.01 (1.00"1.01)). Compared to never-smokers, former smokers are more likely to develop interstitial abnormalities (Thin-section CT: 2.38 (1.17"4.83); CXR: 1.77 (1.08"2.91)). Compared to Group 1 (who were exposed to the highest level of asbestos), all other groups had significantly lower odds of developing interstitial abnormalities. Comments: Results for incidence came from longitudinal analyses; Results only reflect findings from Groups 3 and 4 as exposure in these groups were measured with PCM. Exposure: Group I: 110.9 ± 140.3 fibres-cc-years; Group II: 44.1 ± 49.4 fibres-cc-years; in addition to chyrostile, group 1 was also exposed to tremolite.	Medium	3077807
Risk of mesothelioma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 51 case-control pairs of patients from Helsinki University Central Hospital	TEM SEM Biomonitoring Biomonitoring matrix: Lung; >1 million fibers/g dry lung tissue; Asbestos - Not specified: 1332-21-4	Elevated risk of mesothelioma associated with a lung fiber concentration of > 1 million fibers/g of dry tissue in men: OR = 14.4 (CI, 2.5 -178)	Medium	3082320
Pleural plaques confirmed by ILO classification via chest radiographs. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos cement factory: (hired between 1965-1969 with at least 2 years of employment), Belgium, n=73.	fiber membrane method; personal exposures Air (personal level), Air (area level), Occupational From 1970-1985, concentrations ranged from 16.4 to 98.7 fiber-years/ml, with a mean of 26.3 +/- 12.6 fiber-years/ml (SD) . Majority chrysotile, some crocidolite and amosite.; Asbestos - Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed.	Medium	783706

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
FV, FEV1, and FVC measured by with a Morgan TT. Autor-Lind apparatus. Transfer factor of carbon monoxide measured by measured by the single-breathmethod. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos cement factory: (hired between 1965-1969 with at least 2 years of employment), Belgium, n=73.	fiber membrane method; personal exposures Air (personal level), Air (area level), Occupational From 1970-1985, concentrations ranged from 16.4 to 98.7 fiber-years/ml, with a mean of 26.3 +/- 12.6 fiber-years/ml (SD) . Majority chrysotile, some crocidolite and amosite.; Asbestos - Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed.	Medium	783706
mesothelioma mortality Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; 72 Italians who had died from asbestos-related disease in Northern Italy, 2000-2018, age not reported	SEM-EDS Biomonitoring Biomonitoring matrix: lung tissue sample; Asbestos, Median (ff/gdw) 24, 199.7 from both occupational and anthropogenic environmental exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Asbestos fiber concentration significantly different in those who died from mesothelioma compared with those who died from other asbestos-related diseases; Mann-Whitney t-test = 3.71, p-value <0.001 [Mesothelioma, Median (IQR): 11,320 (0.0-92,282.6); No Mesothelioma, Median (IQR): 297,895 (30,321-881,567.5) Comments: Table 3	Low	7460031
mesothelioma mortality Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; 72 Italians who had died from asbestos-related disease in Northern Italy, 2000-2018, age not reported	SEM-EDS Biomonitoring Biomonitoring matrix: lung tissue sample; Asbestos, Median (ff/gdw) 24, 199.7 from both occupational and anthropogenic environmental exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Asbestos fiber concentration significantly different in those who died from mesothelioma compared with those who died from other asbestos-related diseases; Mann-Whitney t-test = 3.71, p-value <0.001 [Mesothelioma, Median (IQR): 11,320 (0.0-92,282.6); No Mesothelioma, Median (IQR): 297,895 (30,321-881,567.5) Comments: Table 3	Low	7460031

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
lung cancer mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	Lung cancer mortality positively associated with category of asbestos exposure; Adjusted HR (95% CI) = 2.99 (1.30, 6.91) for high exposure group. No other exposure groups with significant results. P for trend = 0.002. Comments: Additional analysis of the joint effect of asbestos exposure and smoking status reported in Table 4.		2638749
asbestosis mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	Asbestosis mortality positively associated with category of asbestos exposure; Adjusted HR (95% CI) = 3.80 (1.29, 11.22) for high exposure group. No other exposure groups with significant results. P for trend = 0.003.	Medium	2638749
Non-malignant respiratory disease mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	Non-malignant respiratory disease mortality not significantly associated with any category of asbestos exposure. P for trend = 0.105.	Medium	2638749
Non-malignant respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	Non-malignant respiratory disease: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 2.98 (2.41, 3.69);Non-malignant respiratory disease, miners versus control: Adjusted HR (95% CI): 3.34 (1.76, 6.33) Comments: Tables 2-3	Medium	2572504

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Epidemiology Extraction Table: Lung/Respiratory

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	Lung cancer: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 3.59 (2.76, 4.66); Lung cancer, miners versus control: Adjusted HR (95% CI): 4.61 (1.96, 10.86) Comments: Tables 2-3	Medium	2572504
Laryngeal cancer outcomes Study Design: Case-Control	Occupational; PESS included in study; Female, Male; 235 individuals diagnosed with laryngeal cancer between September 1983 and February 1987 in Washington	JEM JEM Various chemicals, including asbestos, with exposure levels determined through JEM; Asbestos - Not specified: 1332-21-4	Asbestos OR (95% CI)Peak (highest lifetime exposure code)None: - (reference)Low: 1.2 (0.6-7.1)Medium: 1.3 (0.8-2.0)High: 1.1 (0.6-1.9) Comments: There were no statistically significant findings for asbestos in this study. It is also important to note that there are limitations to this study, such as with their power.	Uninformative	626626

Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Any cause mortality	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-year group: 157.1 (p-value < 1%)O/E: 45/28.6 Comments: This value was extracted from table 3.6, page 32.	Medium	3100838

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years, >/= 20 years latency: 199.5 (p-value < 1%)O/E: 31/15.5 Comments: This value extracted from Table 3.8.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, < 50 fiber/cc-year: 230.3 (p-value < 5%)Observed/Expected: 9/3.9 Comments: This value extracted from table 3.6, page 32.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >/= 20 years latency: 261.3 (p-value < 1%)O/E: 13/5 Comments: This value extracted from table 3.10, page 36.	Medium	3100838
Non-malignant respiratory diseases	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR for males, 20+ years latency: 243.0 (p-value < 1%)O/E: 20/8.2 Comments: This value extracted from table 3.11, page 41.	Medium	3100838

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All malignant neoplasm SMR	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years: 268.1 (p-value < 1%)O/E: 15/5.6 Comments: This value extracted from Table 3.6.	Medium	3100838
Any cause mortality	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-year group: 157.1 (p-value < 1%)O/E: 45/28.6 Comments: This value was extracted from table 3.6, page 32.	Medium	3100838
All cause mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years, >/= 20 years latency: 199.5 (p-value < 1%)O/E: 31/15.5 Comments: This value extracted from Table 3.8.	Medium	3100838
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=40 pleural mesothelioma cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Pleural mesothelioma (n=40) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 65 (57); 1980-89: 28 (21); 1990-94: 10 (26); overall: 39 (34).	Medium	709467

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=10 peritoneal mesothelioma cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Peritoneal mesothelioma (n=10) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 135 (134); 1980-89: 393 (53); 1990-94: 167 (76); overall: 154 (71).	Medium	709467
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=20 other disease cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Other diseases: Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Other diseases: (n=20) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 455 (79); 1980-89: 66 (55); 1990-94: 9 (4); overall: 28 (37).	Medium	709467
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=70 all cause mortality cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	All cause mortality: Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. All cause mortality: (n=70) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 93 (66); 1980-89: 39 (32); 1990-94: 15 (18); overall: 47 (39).	Medium	709467

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pneumoconiosis and other respiratory disease mortality (ICD-9: 470-478 and 494-519). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; The study population consists of white men, black men, and white women who were employed for at least one month at a South Carolina asbestos (chrysotile) textile plant.	PCM midget impinger Occupational Exposure is reported in fibres/cm^ 3-day and ranges are listed below: <500500-1,0001,000-2,5002,500-10,00010,000-40,00040,000-100,000>100,000Total; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs of pneumoconiosis by exposure among asbestos textile workers with at least 15 years latency White men had significantly increased SMRs at exposures of 10,000-40,000, 40,000-100,000, >100,000, and total fibres/cm^ 3-day. Black men had no SMRs for the first three exposure groups, but had significantly increased SMRs at 40,000-100,000, >100,000 fibres/cm^ 3-day.White women had significantly increased SMRs at exposures of10,000-40,000, 40,000-100,000, >100,000, and total fibres/cm^ 3-day. Note that no confidence intervals were provided. * significant at p<0.05 ** significant at p<0.01White men<500: 2.17500-1,000: 2.351,000-2,500: 1.582,500-10,000: 1.7610,000-40,000: 6.47**40,000-100,000: 15.71**>100,000: 33.33**Total: 3.86**Black men<500: 500-1,000:1,000-2,500:2,500-10,000: 1.5010,000-40,000: 2.5040,000-100,000: 8.00**>100,000: 10.00Total: 1.93*White women<500: 1.15500-1,000: 0.711,000-2,500: 0.952,500-10,000: 0.6310,000-40,000: 3.33*40,000-100,000: 10.00**>100,000: 200**Total: 1.77* Comments: Results can be found in Table 7 of Brown et al., 1994, HEROID: 3081832).	Medium	3081832
All-cause mortality ascertained through death records	Adults or general, Occupational; PESS included in study; Male; Former male workers from a crocidolite mine and mill who applied for financial compensation for pneumoconiosis between 1947 and December 1982: (1986), Wittenoom, Western Australia. 280 had a plain chest radiograph that had been taken within 2 years of a submitted application for compensation. 136-139 were confirmed to have pneumoconiosis by observers (Cookson et al., 1986 1005616).	Casella long running thermal precipitator, Casella gravimetric dust sampler, and a Hexhlet Air (area level), Occupational Median cumulative exposure ranged from 77-91 fibers/cubic cm/year and median duration of exposure ranged from 33-37 months (Cookson et al., 1986 1005616). Estimated geometric mean total exposure for whole population = 7 fibers/cubic cm/years (Cookson et al., 1984 3083452). Majority crocidolite; Asbestos - Crocidolite (riebeckite): 12001-28-4	Total cumulative exposure was not a predictor of mortality (Cookson et al., 1984 3083452)	Medium	3083452

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for all cause mortality for cumulative dose groups:<10,000 f/cc days = 118, p <0.05;10,000 - 40,000 f/cc days = 174, p < 0.01;40,000 - 100,000 f/cc days = 235, p < 0.01;100,000 - 200,000 f/cc days = 175, ns;Total = 151, p < 0.01 Comments: Table 6-1	Medium	6884448
Diseases of the circulatory system mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for diseases of the circulatory system mortality for cumulative dose groups:<10,000 f/cc days = 86, ns;10,000 - 40,000 f/cc days = 136, p < 0.05;40,000 - 100,000 f/cc days = 110, ns;100,000 - 200,000 f/cc days = 77, ns;Total = 105, ns Comments: Table 6-1	Medium	6884448
Lung cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for lung cancer mortality for cumulative dose groups:<10,000 f/cc days = 223, p < 0.05;10,000 - 40,000 f/cc days = 367, p < 0.01;40,000 - 100,000 f/cc days = 978, p < 0.01;100,000 - 200,000 f/cc days = 5,000, p < 0.05;Total = 399, p < 0.01 Comments: Table 6-1	Medium	6884448
Digestive system cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for digestive system cancer mortality for cumulative dose groups:<10,000 f/cc days = 37, ns;10,000 - 40,000 f/cc days = 162, ns;40,000 - 100,000 f/cc days = 380, ns;100,000 - 200,000 f/cc days = - (no observed deaths);Total = 127, ns Comments: Table 6-1	Medium	6884448

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Other nonmalignant respiratory diseases (asbestosis, fibrosis lung, lung abscesses, pulmonary emphysema, pulmonary congestion & edema) mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for other nonmalignant respiratory diseases mortality for cumulative dose groups:<10,000 f/cc days = 71, ns;10,000 - 40,000 f/cc days = 897, $p < 0.01$;40,000 - 100,000 f/cc days = 1,842, $p < 0.01$;100,000 - 200,000 f/cc days = 2,500, $p < 0.05$;Total = 642, $p < 0.01$ Comments: Table 6-1	Medium	6884448
Asbestosis or pulmonary fibrosis mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	Incidence density rates/1,000 person-years for asbestosis/pulmonary fibrosis mortality over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 0.32. 1,000-10,000 fiber/cc-days: 0.18. 10,000-40,000 fiber/cc-days: 1.98. 40,000-100,000 fiber/cc-days: 5.99. >100,000 fiber/cc-days: 15.87. Comments: Asbestosis/pulmonary fibrosis deaths were combined. Numbers were sparse in some exposure categories as this outcome is rare.	Medium	67
Other non-malignant respiratory disease mortality (excludes infectious) assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for other non-malignant respiratory diseases over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 362 ($p<0.05$). 1,000-10,000 fiber/cc-days: -. 10,000-40,000 fiber/cc-days: 897 ($p<0.05$). 40,000-100,000 fiber/cc-days: 1842 ($p<0.05$). >100,000 fiber/cc-days: 2500 ($p<0.05$).	Medium	67

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Circulatory system mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for circulatory disease over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 139. 1,000-10,000 fiber/cc-days: 112. 10,000-40,000 fiber/cc-days: 158 (p<0.05). 40,000-100,000 fiber/cc-days: 123. >100,000 fiber/cc-days: 157.	Medium	67
All-cause mortality assessed using vital status information from a range of sources (records from the Social Security Administration, Internal Revenue System, US Postal Mail Correction Service, state drivers license files, state vital statistics offices; as well as telephone listings, Polk directories, property records, voter records, funeral home records). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for all-cause mortality over categories of increasing cumulative exposure were as follows: <1,000 fiber/cc-days: 144. 1,000-10,000 fiber/cc-days: 138 (p<0.05). 10,000-40,000 fiber/cc-days: 183 (p<0.05). 40,000-100,000 fiber/cc-days: 243 (p<0.05). >100,000 fiber/cc-days: 240.	Medium	67
Lung cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for lung cancer mortality over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 140. 1,000-10,000 fiber/cc-days: 279 (p<0.05). 10,000-40,000 fiber/cc-days: 352 (p<0.05). 40,000-100,000 fiber/cc-days: 1099 (p<0.05). >100,000 fiber/cc-days: 1818 (p<0.05).	Medium	67

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive system cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed.	Medium	67
mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	Mesothelioma mortality positively associated with exposure among workers when compared with the US general population; SMR (95% CI) = 10.5 (1.3-38.0), p-value<0.05. Comments: SMR were age and calendar year adjusted.	Low	1066036
Cancer of the lung, trachea, and bronchus mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the lung, trachea, and bronchus mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 0.9 (0.5-1.5). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mortality from all cancers Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for all cancer mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 0.9 (0.7-1.3). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036
Mortality from all causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	Significant inverse associations between all cancer mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 0.8 (0.6-0.9), p-value < 0.01. Comments: SMR were age and calendar year adjusted.	Low	1066036
Asbestosis mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 15.4 (0.4-85.9). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Chronic obstructive pulmonary disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 1.0 (0.4-1.9). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036
Other respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations between asbestosis mortality and exposure among workers when compared with the US general population; SMR (95% CI) = 0.8 (0.1-3.0). Comments: SMR were age and calendar year adjusted.	Uninformative	1066036
Cancer of the digestive system and peritoneum mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the digestive system and peritoneum mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 1.1 (0.6-1.9). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency; Cumulative exposure from first exposure; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Lung cancer SMR among workers without asbestosis (n=12) was significantly elevated at 20 year latency (5.53 [2.86-9.66], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=4) was significantly elevated at 20 year latency (9.96 [2.71, 25.50], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 20 year latency due to overlap in CIs.Lung cancer SMR among workers without asbestosis (n=9) was significantly elevated at 25 year latency (5.81 [2.66-11.00], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=2) was significantly elevated at 25 year latency (9.20 [1.11-33.00], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 25 year latency due to overlap in CIs.No reported lung cancer deaths among workers without asbestosis at 30-year latency.Lung cancer SMR among workers with asbestosis (n=2) was elevated at 30 year latency but was not statistically significant (7.46 [0.90-27.00], p-value unavailable). Lung cancer SMRs increase with increasing 18-year cumulative exposure groups: <50 f-y/ml=5.76 (0.70, 21.00); 50"99 f-y/ml= 5.51 (1.80"12.90); 100"149 f-y/ml= 9.60 (3.90"20.00); 150"199 f-y/ml= 6.87 (1.40"20.00); 200 and over f-y/ml= 9.06 (1.90"26.00). though no statistical difference between the groups.Lung cancer SMR among smokers (n=14): 6.44, and nonsmokers (n=3): 6.18, though no statistical difference between the two groups.Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 1.40 (p=0.58) comapred to those without asbestosis.Time-dependent Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 2.30 (p=0.15, 1-tailed p = 0.07) comapred to those without asbestosis. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Digestive cancer SMR among workers without asbestosis (n=8) was significantly (according to author) elevated at 20 year latency (4.34, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was significantly (according to author) elevated at 20 year latency (2.76, CI unavailable, p-value unavailable).Digestive cancer SMR among workers without asbestosis (n=7) was elevated at 25 year latency (5.50, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was elevated at 25 year latency (5.32 CI unavailable, p-value unavailable). Significance unknownNo reported digestive cancer deaths among workers without asbestosis at 30-year latency.Digestive cancer SMR among workers with asbestosis (n=3) was elevated at 30 year latency (13.20, CI unavailable, p-value unavailable). Significance unknown Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All causes mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	All causes SMR among workers without asbestosis (n=45) was significantly elevated at 20 year latency (2.02 [1.47, 2.70], p-value unavailable).All causes SMR among workers with asbestosis (n=15) was significantly elevated at 20 year latency (3.43 [1.92, 5.66], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.All causes SMR among workers without asbestosis (n=36) was significantly elevated at 25 year latency (2.43 [1.70, 3.36], p-value unavailable).All causes SMR among workers with asbestosis (n=9) was significantly elevated at 25 year latency (4.01 [1.83, 7.61], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.All causes SMR among workers without asbestosis (n=1) was lowered at 30 year latency (0.44 [0.01, 2.45], p-value unavailable), though no statistically significant.All causes SMR among workers with asbestosis (n=11) was significantly elevated at 30 year latency (4.13 [2.06, 7.39], p-value unavailable). Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All malignancies mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	All malignancies SMR among workers without asbestosis (n=28) was significantly elevated at 20 year latency (4.65 [3.09, 6.72], p-value unavailable).All malignancies SMR among workers with asbestosis (n=5) was significantly elevated at 20 year latency (4.39 [1.42, 10.20], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.All malignancies SMR among workers without asbestosis (n=23) was significantly elevated at 25 year latency (5.44 [2.68, 6.35], p-value unavailable).All malignancies SMR among workers with asbestosis (n=3) was significantly elevated at 25 year latency (4.92 [1.01, 14.40], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.No reported all malignancies deaths among workers without asbestosis at 30-year latency.All malignancies SMR among workers with asbestosis (n=6) was significantly elevated at 30 year latency (7.99 [2.93, 17.40], p-value unavailable). Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Circulatory disease mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Circulatory disease SMR among workers without asbestosis (n=8) was lowered at 20 year latency (0.73 [0.30, 1.40], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=5) was elevated at 20 year latency (2.18 [0.70, 5.10], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers without asbestosis (n=7) was lowered at 25 year latency (0.96 [0.40, 2.00], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=3) was significantly elevated at 25 year latency (2.59 [0.50, 7.60], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers without asbestosis (n=1) was significantly elevated at 30 year latency (0.93 [0.02, 5.20], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=2) was significantly elevated at 30 year latency (1.50 [0.20, 5.40], p-value unavailable), though not statistically significant. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
respiratory disease mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Respiratory disease SMR among workers without asbestosis (n=3) was elevated at 20 year latency (2.35 [0.50, 6.90], p-value unavailable), though not statistically significant.Respiratory disease SMR among workers with asbestosis (n=4) was significantly elevated at 20 year latency (13.80 [3.76, 55.00], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.Respiratory disease SMR among workers without asbestosis (n=2) was significantly elevated at 25 year latency (2.26 [0.30, 8.20], p-value unavailable), though not statistically significant.Respiratory disease SMR among workers with asbestosis (n=3) was significantly elevated at 25 year latency (19.30 [4.00, 56.00], p-value unavailable). No statistical difference between the two groups due to overlapping CIs.No reported respiratory disease deaths among workers without asbestosis at 30-year latency.Respiratory disease SMR among workers with asbestosis (n=3) was significantly elevated at 30 year latency (5.20 [0.10, 29.00], p-value unavailable). Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Pneumoconiosis mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Pneumoconiosis SMR among workers without asbestosis (n=1) was elevated at 20 year latency (18.00 CI unavailable, p-value unavailable). Statistical significance unknown.Pneumoconiosis SMR among workers with asbestosis (n=2) at 20-year latency not reported.No reported pneumoconiosis disease deaths among workers without asbestosis at 25-year latency.Pneumoconiosis SMR among workers with asbestosis (n=1) at 25-year latency not reported.No reported pneumoconiosis disease deaths among workers without asbestosis at 30-year latency.Pneumoconiosis SMR among workers with asbestosis (n=1) at 30-year latency not reported. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural mesothelioma mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Pleural mesothelioma SMR among workers without asbestosis (n=3) at 20-year latency not reported.No reported pleural mesothelioma deaths with asbestosis at 20-year latency.Pleural mesothelioma SMR among workers without asbestosis (n=2) at 25-year latency not reported.No reported pleural mesothelioma deaths with asbestosisat 25-year latency.No reported pleural mesothelioma deaths without asbestosis at 30-year latency.Pleural mesothelioma SMR among workers with asbestosis (n=1) at 30-year latency not reported. Comments: While pleural mesothelioma is a reported outcome for Table 1, it did not seem to warrant a standalone data evaluation due to the lack of available findings (evidence in this data extraction form). Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Relevant outcomes of all cause mortality, non-malignant respiratory disease, and ischemic heart disease were assessed utilizing Canadian national mortality databases and death registries, with confirmation by pathology and autopsy reports for some analyses. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Asbestos exposed (n=535, production and maintenance workers) and control (n=205) male employees (total n=740) of an asbestos cement pipe manufacturing factory with a minimum of one year employment who had been hired prior to 1960.	estimated from previous sampling results and extensive job history data The estimated average cumulative exposure of the production workers was about 60 fiber-years/mL (chrysotile and crocidolite). The estimated mean cumulative exposure within the board shop, in which chrysotile was the sole asbestos type utilized, was 39 f-y/mL.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In the period 20 years from first exposure, the production workers had a standardized mortality ratio of 181 for all causes of death, 320 for non-malignant respiratory disease, and 58 for ischemic heart disease.	Low	3083612

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Relevant outcomes of all cause mortality, non-malignant respiratory disease, and ischemic heart disease were assessed utilizing Canadian national mortality databases and death registries, with confirmation by pathology and autopsy reports for some analyses. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Asbestos exposed (n=535, production and maintenance workers) and control (n=205) male employees (total n=740) of an asbestos cement pipe manufacturing factory with a minimum of one year employment who had been hired prior to 1960.	estimated from previous sampling results and extensive job history data The estimated average cumulative exposure of the production workers was about 60 fiber-years/mL (chrysotile and crocidolite). The estimated mean cumulative exposure within the board shop, in which chrysotile was the sole asbestos type utilized, was 39 f-y/mL.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In the period 20 years from first exposure, the production workers had a standardized mortality ratio of 181 for all causes of death, 320 for non-malignant respiratory disease, and 58 for ischemic heart disease.	Low	3083612
Relevant outcomes of all cause mortality, non-malignant respiratory disease, and ischemic heart disease were assessed utilizing Canadian national mortality databases and death registries, with confirmation by pathology and autopsy reports for some analyses. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Asbestos exposed (n=535, production and maintenance workers) and control (n=205) male employees (total n=740) of an asbestos cement pipe manufacturing factory with a minimum of one year employment who had been hired prior to 1960.	estimated from previous sampling results and extensive job history data The estimated average cumulative exposure of the production workers was about 60 fiber-years/mL (chrysotile and crocidolite). The estimated mean cumulative exposure within the board shop, in which chrysotile was the sole asbestos type utilized, was 39 f-y/mL.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In the period 20 years from first exposure, the production workers had a standardized mortality ratio of 181 for all causes of death, 320 for non-malignant respiratory disease, and 58 for ischemic heart disease.	Low	3083612
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) and 420 lung cancer patients as controls	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Odds Ratio mesothelioma:lung cancer (95% CI):0 (reference) 1.000.025 - million asbestos fibers longer than 5 um per dry gram = 2.12 (0.82 - 5.49)0.05 - million asbestos fibers longer than 5 um per dry gram = 4.70 (2.38 - 9.25)0.2 - million asbestos fibers longer than 5 um per dry gram = 15.31 (5.89 - 39.8)0.5 - million asbestos fibers longer than 5 um per dry gram 21.88 (6.52 - 73.4)>= 1.0 million asbestos fibers longer than 5 um per dry gram = 35.00 (7.22 - 169.6)		3077660

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) and 420 lung cancer patients as controls	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Odds Ratio mesothelioma:lung cancer (95% CI):0 (reference) 1.000.025 - million asbestos fibers longer than 5 um per dry gram = 2.12 (0.82 - 5.49)0.05 - million asbestos fibers longer than 5 um per dry gram = 4.70 (2.38 - 9.25)0.2 - million asbestos fibers longer than 5 um per dry gram = 15.31 (5.89 - 39.8)0.5 - million asbestos fibers longer than 5 um per dry gram 21.88 (6.52 - 73.4)>= 1.0 million asbestos fibers longer than 5 um per dry gram = 35.00 (7.22 - 169.6)		3077660
Asbestosis mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; HERO ID 3081241 includes former workers working for at least 1 month between 01 January 1940 and 31 December 1975 in a chrysotile asbestos textile plant in South Carolina and followed through 31 December 1990 (n = 1247 white male workers, n = 546 non-white men, n = 1229 white women, n = 19 non-white women). HERO ID 709498 includes follow-up through 2001 of a cohort of a total of 3,072 workers. This outcome was not assessed in HERO ID 7837.	estimated from measured dust concentrations estimated Lifetime cumulative exposure in HERO ID 709498 median of 5.5 (range: 0.1-699.8) fiber-years/mL. Equivalent exposure for HERO ID 3081241 not reported.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5, Anthophyllite: 17068-78-9	HERO ID 3081241 found a statistically significant, non-linear (on a multiplicative scale) exposure-response relationship between cumulative exposure and asbestosis mortality, with an excess lifetime risk for white men exposed for 45 years at 0.1 fibers/mL of 2/1000 (similar estimates for other groups and exposure levels can be found in Table 5). HERO ID 709498 also found that cumulative exposure was positively and significantly associated with asbestosis mortality in power models.	Medium	7837
All cause mortality (ICD-7 000-999) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 116 (95% CI: 99-136)10-yr Latency (SMR): 121 (95% CI: 100-147) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
All cancer mortality (ICD-7 140-209) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 122 (95% CI: 88-171)10-yr Latency (SMR): 140 (95% CI: 95-203) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Gastrointestinal cancer mortality (ICD-8 150-159) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 131 (95% CI: 72-220)10-yr Latency (SMR): 145 (95% CI: 72-260) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Respiratory cancer mortality (ICD-8 160-163) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 153 (95% CI: 73-280)10-yr Latency (SMR): 130 (95% CI: 48-284) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Cardiovascular disease mortality (ICD-8 390-458) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 100 (95% CI: 77-129)10-yr Latency (SMR): 108 (95% CI: 80-145) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Ischemic heart disease mortality (ICD-8 410-414) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 100 (95% CI: 73-135)10-yr Latency (SMR): 111 (95% CI: 79-156) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Bronchitis, emphysema, asthma mortality (ICD-8 490-493) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 201 (95% CI: 55-514)10-yr Latency (SMR): 227 (95% CI: 47-663) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Gastrointestinal disease mortality (ICD-8 520-577) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 151 (95% CI: 61-312)10-yr Latency (SMR): 112 (95% CI: 23-328) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Urinary tract disease mortality (ICD-8 520-577) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 291 (95% CI: 79-745)10-yr Latency (SMR): 389 (95% CI: 80-1140) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mortality from violence (ICD-8 800-999) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 153 (95% CI: 109-213)10-yr Latency (SMR): 151 (95% CI: 89-250) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Mesothelioma: incidence and mortalityMortality: all-cause, lung cancer, other cause-specificCancer incidence: all neoplasms, lung/respiratory cancers, other cause-specific Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Children (2-18y); PESS included in study; Female, Male; These studies analyzed a cohort of nearly 5,000 individuals who had lived in Wittenoom, Australia for $\geq$1 month from 1943-1993. Asbestos workers were excluded. Cohort size varied slightly with updates over time, including 4,768 participants (2608 women, 2160 men) at the end of 2000, and about 2,560 individuals exposed as children <15y in 2007 (Reid et al. 2008, 709466; Reid et al 2007, 709501; Reid et al 2012, 2088306).	TEM, PCM SEM, extrapolation based on dust exposure history Air (personal level), Air (area level) In the most recent study geometric mean (IQR) for estimated cumulative exposure was 3.02 (1.4-7.70) f/mL-years in persons who had been exposed as children, and 2.05 (0.90-5.75) f/mL-years in persons exposed only as adults (Reid et al. 2018, 6869529).; Asbestos - Crocidolite (riebeckite): 12001-28-4	For mesothelioma, the HR (95%) CI per 10 f/mL-years increase in exposure was 3.10 (2.11 to 4.53) in the most recent paper (Reid et al. 2018, 6869529). Hazard ratios for lung cancer reported in several papers were not significant. SMRs and/or SIRs were significant for mesothelioma, as well as a few additional outcomes, including "signs/symptoms ill-defined" mortality among women exposed in childhood, leukemia incidence and nervous system mortality in men exposed as children, and pneumoconiosis mortality in women (based on n=2 cases). Comments: This large cohort of residentially but not occupationally exposed individuals included 119 cases of mesothelioma by 2014. Analyses examined gender and age at exposure differences. There are concerns regarding exposure measurement error, particularly prior to 1966 when mining ceased: a single value based on expert judgment was extrapolated backward for the entire duration as no fiber measures had been taken. Exposure measurement error may be differential for mesothelioma cases who had detailed residential and work histories, while duration of residence was estimated from limited public records for half of the remaining cohort. There was about 20% loss to follow-up. Several SMRs/SIRs reached significance using a censoring method that might over-estimate associations, but not the alternative approach.	Medium	709618

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
stillbirth Study Design: Case-Control	Infants (birth to 2y); PESS included in study; Female, Male; 40 stillborn infants in South Texas and 45 healthy live born infants, 1990-1992, at autopsy and birth	TEM Biomonitoring Biomonitoring matrix: Cases: liver, lung, placenta, and skeletal muscle tissues; Controls: placenta; Asbestos, Cases: Mean (f/g) 208047; Controls: Mean (f/g) 0; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8, Crocidolite (riebeckite): 12001-28-4, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Mean fiber levels significantly increased in stillborn infants compared to healthy infants. Mean (cases; controls) = (208,047; 0) p-value $< .001$	Medium	709626
Evidence of small opacities (>= 1/0) measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Observed relationship between increasing cumulative exposure to asbestos and small opacities (statistical significance not tested).	Medium	2223821
Evidence of small opacities (>= 1/0) measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Observed relationship between increasing cumulative exposure to asbestos and small opacities (statistical significance not tested).	Medium	2223821

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All causes mortality with evidence of pleural (observed/ expected) SMR measured by midget impingers Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Males from two cement plants in New Orleans who were exposed to asbestos occupationally from 1940-1969.	midget impinger Air (area level) Mean average concentration of plant 1 = 7.8 mppcf and mean average concentration of plant 2 = 7.5 mppcf range from 1937-1969. Authors report crocidolite and chrysotile in the cement factories (Hughes et al. 1987, 3583332).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed for all cause mortality.	Medium	2223821
All cause mortality measured using federal, state, and local agency records Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Respiratory malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.31;25-49 mppcf-years = 2.00, $p < 0.05$;50-99 mppcf-years = 1.81, $p < 0.05$;>=100 mppcf-years = 2.31, $p < 0.01$. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 0.95;6-24 mppcf-years = 1.17;25-49 mppcf-years = 1.41;50-99 mppcf-years = 1.51, $p < 0.05$;>=100 mppcf-years = 1.37 Comments: Tables 8 and 9	Medium	281
Digestive cancer mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Stomach malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Oesophagus malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Colon and rectum malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Kidney or bladder malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Other digestive malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Lymphatic malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Residual cancer (includes buccal cavity, larynx, prostate, and pharynx) mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.15;25-49 mppcf-years = 1.71;50-99 mppcf-years = 2.31, $p < 0.05$;>=100 mppcf-years = 0.86. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pneumoconiosis mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
All cause mortality - analyzed by categories of exposure and duration of employment. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 5,492 of 6,931 male workers at two New Orleans asbestos cement plants (along with silica dust, exposure at plant 1=chrysotile, plant 2=chrysotile + crocidolite). 1,351 deaths (of 2,143 total) that occurred>20 years after initial exposure were analyzed.	Impinger dust with conversion factor (PCM) Air (area level) Cumulative asbestos (total dust) exposure categories were analyzed, e.g., as <6, 6-24, 25-49, 50-99 and >=100 mppcf-years (millions of particles per cubic foot). Exposure was also analyzed using duration of employment categories (e.g., <= 0.25 years, 0.25-1 year, 1-5 years, 5-15 years, and >15 years) and using continuous mppcf measures. A mean conversion factor of 1.4 f/mL = 1 mppcf was provided to estimate asbestos fiber content based on a separate study conducted in plant 2.;	The SMR for all-cause mortality was 0.94 (0.91 plant 1, 0.95 plant 2) overall. Plant 1 SMRs were <1.0. By cumulative exposure, several all-cause SMRs at plant 2 were ns but exceeded 1.0 (1.11 for 50-99 mppcf-y; 1.05 for ≥100 mppcf-y). Several plant 2 SMRs were also above 1.0 for longer employment duration (>1-5y = 1.09; >5-15y = 1.11; >15y = 0.98). Comments: A mean conversion factor (1.4 f/mL = 1 mppcf) was applied to estimate lung cancer regression coefficients for dose-response as fibers/mL equivalents from mppcf. From the paper: "..fitting with an intercept of 1.0 yields the equation O/E = 1 0 + 0.0004 x [where x = cumulative exposure]. " the best factor for converting mppcf to f/ml will be assumed to be 1.4 f/ml = 1 mppcf. Using this conversion factor the slope of the above regression line when x is expressed in f/ml-yrs is 0.0003." Confirmed: 0.0004 /1.4 = 0.0003 "Forcing an intercept of 1.0 yields the equation O/E = 1.0 + 0.0107 x (x in mppcf-yrs). For x expressed in f/ml-yrs, this equation is O/E = 1 0 + 0.0076 x". Confirmed: 0.0107 /1.4 = 0.0076		3583332
lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/c.c.;	Table III Total Lung cancer Deaths Observed: Group 1: 12; Group 2: 5; Group 3: 2; Group 4: 6; Group 5: 2Table III Total Lung cancer Deaths Expected: Group 1: 1.18; Group 2: 1.57; Group 3: 1.35; Group 4: 6.41; Group 5: 0.24		115

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other neoplasms mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Other neoplasms Deaths Observed: Group 1: 5; Group 2: 3; Group 3: 1; Group 4: 4; Group 5: 1Table III Total Other neoplasms Deaths Expected: Group 1: 2.61; Group 2: 2.38; Group 3: 1.55; Group 4:9.13; Group 5: 2.72		115
Diseases of the circulatory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Disease of circulatory system Deaths Observed: Group 1: 13; Group 2: 8; Group 3: 9; Group 4: 24; Group 5: 2Table III Total Disease of circulatory system Expected: Group 1: 5.33; Group 2: 5.66; Group 3: 4.03; Group 4:22.60; Group 5: 1.82		115
Diseases of the respiratory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Disease of respiratory system Deaths Observed: Group 1: 14; Group 2: 3; Group 3: 1; Group 4: 8; Group 5: 1Table III Total Disease of respiratory system Deaths Expected: Group 1: 2.37; Group 2: 2.28; Group 3: 1.43; Group 4:8.59; Group 5: 0.55		115
All other causes mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total All other cause Deaths Observed: Group 1: 4; Group 2:4; Group 3:2; Group 4: 12; Group 5: 4Table III Total All other cause Deaths Expected: Group 1: 5.58; Group 2: 4.29; Group 3: 2.26; Group 4:15.55; Group 5: 2.82		115

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total All cause Deaths Observed: Group 1: 48; Group 2:23; Group 3:15; Group 4: 54; Group 5: 10Table III Total All cause Deaths Expected: Group 1: 17.07; Group 2: 16.18; Group 3: 10.62; Group 4:62.28; Group 5: 8.15		115
All causes of death verified by family doctors and/or social workers.	Adults or general, Occupational; PESS included in study; Female, Male; Workers at an asbestos cement factory: (1980), Belgium, n=1973.	fiber membrane method; personal exposures Air (area level), Occupational Fiber measurements ranged from 0-3200 fiber-years between 1963-1977. Majority chrysotile, some crocidolite and amosite.;	There was a significant excess of deaths due to external or accidental causes (n=43) among male workers, compared to the expected estimate on the general population (n=29) (p=0.01). This count seems to generally increase by age: 15-24: 3, 25-34: 7, 35-44: 8, 45-54: 13, 55-65: 12. However, no analysis was done with fiber-years to examine a dose-response relationship. No excess deaths due to non-malignant causes were found to be significant. Comments: Dose-response relationship is examined for malignant causes (i.e. cancer).		3084226
Lung cancer mortality ascertained from death certificates.	Adults or general, Occupational; PESS included in study; Female, Male; Workers from four asbestos textile mills: (1940-2003), North Carolina and South Carolina, 6136 exposed (3717 men and 2419 women)	TEM Air (area level), Air (indoor), Occupational Exposure was assessed based on diameter (four categories) and length (six categories). The median cumulative exposure across the combined cohort was 8.2 f-y/ml (Elliott et al. 2012, HERO ID 1247861). Majority chrysotile, some amosite and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	The log rate of lung cancer mortality increased by 0.39 per IQR (95% CI: 0.02-0.057, p=0.001) for total TEM fibers.Fibers 5 - 10 um long and <0.25 um in diameter were associated most strongly with lung cancer mortality (log rate 4% per IQR, p<0.001).	High	1257856

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural cancer mortality assessed using ICD codes	Adults or general, Occupational; PESS included in study; Female, Male; North Carolina cohort of textile workers (1950-2003), USA, n = 5397	PCM Midget impingers Air (area level), Occupational Mean cumulative exposure 79.1 fiber-years/mL, Range <0.1 - 5677.9 fiber-years/mL for follow-up from 1950-2003, chrysotileMean cumulative exposure 35.9 fiber-years/mL, Range 0.1-1271.1 fiber-years/mL for follow-up from 1999-2003, chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	"Positive, statistically significant associations were observed between mortality from all pleural cancer (including mesothelioma) and time since first exposure (TSFE) to asbestos (rate ration [RR], 1.19; 95% CI, 1.06-1.34 per year), duration of exposure, and cumulative exposure (RR, 1.15; 95% CI, 1.04-1.28 per 100 f-years/mL; 10-year lag)." Comments: This study was evaluated for mesothelioma in Asbestos Part 1.	High	5160027
Mesothelioma mortality. Study Design: Cross-Sectional	Adults or general; PESS not included in study; Female, Male; 78 deceased mesothelioma cases and 78 referents in nine Canadian provinces, 1979-1984, age range not reported.	TEM Biomonitoring Biomonitoring matrix: Lung sample; Asbestos (amphiboles), geometric mean (per ug dry weight lung tissue), 2.89 (cases - short fiber), 0.74 referents (short fiber), 1.96 (cases - long fiber), 0.28 (referents - long fiber).Asbestos (chrysotile), geometric mean (per ug dry weight lung tissue), 6.30 (cases - short fiber), 5.14 referents (short fiber), 0.31 (cases - long fiber), 0.22 (referents - long fiber).; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9, Chrysotile (serpentine): 12001-29-5	Increased odds of mesothelioma with chrysotile asbestos exposure; OR for 10-100 short fibers chrysotile/ug=1.2; for 1-10 long fibers chrysotile/ug=1.5; 10-100 long fibers chrysotile/ug=5.1. Significantly decreased risk increment of mesothelioma with chrysotile: risk increment (CI) = [long fibers] <0 (<0, 8); [short fibers] 0.02 (<0, 0.2).	Medium	3082766
Lung cancer Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.98 (95% CI: 1.53-2.57); Area B OR = 1.09 (95% CI: 0.78-1.51)	Uninformative	7836

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Laryngeal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 0.48 (95% CI: 0.15-1.56); Area B OR = 1.16 (95% CI: 0.38-3.55) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.36 (95% CI: 0.86-2.16); Area B OR = 0.99 (95% CI: 0.56-1.75) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Colorectal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.18 (95% CI: 0.73-1.91); Area B OR = 0.85 (95% CI: 0.42-1.73) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 17.4 mpcf (area A) and 16.3 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 2.55 (95% CI: 1.52-4.27); Area B OR = 1.11 (95% CI: 0.47-2.62)	Uninformative	7836
Mesothelioma mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos- Libby amphibole: 1318-09-8	No statistically significant associations were observed.	Medium	29964

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory cancer mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 36% mortality (RR=0.36, 95% CI=0.03 to 1.20).No statistically significant associations were observed (McDonald et al. 1986, HERO ID: 29964).	Medium	29964
Pneumoconiosis mortality assessed by nosologist using ICD-8 (McDonald et al. 1986). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	No statistically significant associations were observed (McDonald et al. 1986, HERO ID: 29964).	Medium	29964
Non-malignant respiratory disease mortality assessed by nosologist using ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 38% mortality (RR=0.38, 95% CI=0.12 to 0.96).	Medium	29964

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All causes mortality assessed by nosologist using ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 14% mortality (RR=0.14, 95% CI=0.05 to 0.26).	Medium	29964
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
Malignant neoplasm peritoneum mesothelioma (ICD 158)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm of the peritoneum (ICD 158) observed 9 deaths and expected 0.5. The statistically significant SMR ($p<0.01$) = 1985.3 (907.7, 3768.8). Latency of >= 40 years resulted in statistically significant ($p<0.01$) SMR of 3954 (1590,8148). Total latency also found statistically significant ($p<0.01$) SMR of 1985 (908, 3769).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm (ICD 140-208)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms (ICD 140-208) observed 195 deaths and expected 156.6. The statistically significant SMR (p<0.01) = 124.5 (107.6, 143.2).	Medium	3078781
Malignant neoplasm respiratory tract (160-165)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	MN respiratory tract (160-165) observed 114 deaths and expected 61.6. The statistically significant SMR (p<0.01) = 184.6 (152.3, 221.8).		3078781
Malignant neoplasms larynx (161) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms larynx (161) mortality observed 5 deaths and expected 5.2. The statistically significant SMR (p<0.01) = 96.8 (31.4,225.9).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms pleura (163) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms pleura (163) mortality observed 24 deaths and expected 0.9. The statistically significant SMR (p<0.01) = 2616.6 (1676.5, 3893.3).	Medium	3078781
Malignant neoplasms genitourinary (179-189) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms genitourinary (179-189) mortality observed 14 deaths and expected 20.9. The non- significant SMR= 67 (36.6, 112.3).	Medium	3078781
Malignant neoplasms bladder (188) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms bladder (188) mortality observed 6 deaths and expected 9.3. The non-significant SMR= 64.4 (23.6, 140.1).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms nervous system (190-192) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms nervous system (190-192) mortality observed 3 deaths and expected 3.8. The non-significant SMR= 78.5 (16.2, 229.5).	Medium	3078781
Malignant neoplasms lynphohematopoietic system (200-208) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms lynphohematopoietic system (200-208) mortality observed 5 deaths and expected 10.6. The non-significant SMR= 47.3 (15.3, 110.3).	Medium	3078781
Diabetes (250) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Diabetes (250) mortality observed 8 deaths and expected 17.6. The statistically significant SMR ($p<0.05$) = 45.4 (19.6, 89.5).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cardiovascular diseases (390-459) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Cardiovascular diseases (390-459) mortality observed 124 deaths and expected 217.4. The statistically significant SMR (p<0.01) =57.1 (47.5, 68.0).	Medium	3078781
Ischemic heart diseases (410-414) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Ischemic heart diseases (410-414) mortality observed 41 deaths and expected 86.6. The statistically significant SMR (p<0.01) =47.3 (34.0, 64.2).	Medium	3078781
Respiratory diseases (460-519) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Respiratory diseases (460-519) mortality observed 81 deaths and expected 43.3. The statistically significant SMR (p<0.01) =187.2 (148.7, 232.7).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Bronchitis, emphysema, asthma (490-493) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Bronchitis, emphysema, asthma (490-493) mortality observed 30 deaths and expected 30.2. The non-significant SMR = 99.5 (67.1, 142.0).	Medium	3078781
Pneumoconiosi (500-505) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Pneumoconiosi (500-505) mortality observed 42 deaths and expected 0.3. The statistically significant SMR ($p<0.01$) = 13,313.2 (9595.0, 17 995.7).	Medium	3078781
Asbestosis (501) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Asbestosis (501) mortality observed 41 deaths and expected 0.1. The statistically significant SMR ($p<0.01$) = 43,385.3 (31,133.7-58,856.9).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive system disease (520-579) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Digestive system disease (520-579) mortality observed 34 deaths and expected 45.9. The non-significant SMR = 74.1 (51.3, 103.5).	Medium	3078781
Genitourinary disease (580-629) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Genitourinary disease (580-629) mortality observed 6 deaths and expected 8.7. The non-significant SMR = 69.3 (25.4-150.8).	Medium	3078781
Malignant neoplasm intestine and rectum (152-154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm intestine and rectum (152-154) mortality observed 14 deaths and expected 10.8. The non-significant SMR = 129.9 (71.0-218.0).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm rectum (154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm rectum (154) mortality observed 6 deaths and expected 3.8. The non-significant SMR = 157.1 (57.7-342.0).	Medium	3078781
Malignant neoplasm stomach (151) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm stomach (151) mortality observed 6 deaths and expected 11.3. The non-significant SMR = 52.9 (19.4-115.2).	Medium	3078781
Malignant neoplasm digestive organs and peritoneum (150-159) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm digestive organs and peritoneum (150-159) mortality observed 48 deaths and expected 48.4. The non-significant SMR = 99.1(73.1-131.4).	Medium	3078781

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
SMR related to circulatory systems.	Adults or general; PESS may not included in study; Female, Male; 3143 individuals from asbestos villages and 2165 individuals from control villages. All were farmers.	PCM Air (indoor), Air (outdoor) Indoor and outdoor air samples collected from all villages. Indoor samples were taken inside white-washed houses with white soil and outdoor samples were taken from the center of the village. The authors assumed each individual spent 8 hours/day working outdoors and 16 hours resting or doing other activities indoors, for 11 months/ year.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Male Circulatory Systems SMR: 1.16 (0.94-1.44)Female Circulatory Systems SMR: 1.14 (0.90-1.47)	Medium	709524
SMR related to COPD.	Adults or general; PESS may not included in study; Female, Male; 3143 individuals from asbestos villages and 2165 individuals from control villages. All were farmers.	PCM Air (indoor), Air (outdoor) Indoor and outdoor air samples collected from all villages. Indoor samples were taken inside white-washed houses with white soil and outdoor samples were taken from the center of the village. The authors assumed each individual spent 8 hours/day working outdoors and 16 hours resting or doing other activities indoors, for 11 months/ year.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Male COPD SMR: 1.59 (1.27-1.97)Female COPD SMR: 2.65 (1.10-6.36)	Medium	709524

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All-cause mortality	Adults or general; PESS included in study; Female, Male; Farmers from rural villages in Turkey which were tested for environmental asbestos in white soil	PCM Air (indoor), Air (outdoor) "The cumulative fiber count of the villagers during their lifespan ranged from 0.19 to 14.61 fiber-years/ml. Mean cumulativeexposure was 4.0 fiber-years/ml for women with a 52-year of median exposureduration and 2.7 fiber-years/ml for men with a 55-year of median exposure duration (p <0.001)."; Asbestos - Tremolite: 14567-73-8, Tremolite: 14567-73-8	All-causes mortality (n=234) SMRs were significantly increased for both men and women in exposed villages. Men SMR= 1.40 (1.23-1.59) p<0,05Women SMR= 1.24 (1.06-1.46) p>0.05	Medium	2325159
Circulation systems mortality	Adults or general; PESS included in study; Female, Male; Farmers from rural villages in Turkey which were tested for environmental asbestos in white soil	PCM Air (indoor), Air (outdoor) "The cumulative fiber count of the villagers during their lifespan ranged from 0.19 to 14.61 fiber-years/ml. Mean cumulativeexposure was 4.0 fiber-years/ml for women with a 52-year of median exposureduration and 2.7 fiber-years/ml for men with a 55-year of median exposure duration (p <0.001)."; Asbestos - Tremolite: 14567-73-8, Tremolite: 14567-73-8	Circulation systems mortality (n=81) SMRs were increased for both men and women in exposed villages. Men SMR= 1.16 (0.94-1.44) Women SMR= 1.14 (0.90-1.47)	Medium	2325159
Chronic obstructive pulmonary disease (COPD) mortality	Adults or general; PESS included in study; Female, Male; Farmers from rural villages in Turkey which were tested for environmental asbestos in white soil	PCM Air (indoor), Air (outdoor) "The cumulative fiber count of the villagers during their lifespan ranged from 0.19 to 14.61 fiber-years/ml. Mean cumulativeexposure was 4.0 fiber-years/ml for women with a 52-year of median exposureduration and 2.7 fiber-years/ml for men with a 55-year of median exposure duration (p <0.001)."; Asbestos - Tremolite: 14567-73-8, Tremolite: 14567-73-8	Chronic obstructive pulmonary disease (COPD) mortality (n=18) SMRs were increased for men and significantly increased for women in exposed villages. Men SMR= 1.59 (1.00-2.53)Women SMR= 2.65 (1.10-6.36) p>0.05	Medium	2325159

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments. Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Mesothelioma Hazard Ratio (95% CI) for amphibole (yes/no): 6.98 (1.23, 39.47) Comments: Amphibole exposure in model was yes/no. Authors noted working at any time within the pipe factory was coded as amphibole exposure (yes) and that exposure here was mainly crocidolite; Results were statistically significant (two-sided $p < 0.05$);	Medium	2079066
Respiratory disease Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Non-significant (p=0.53) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model;	Medium	2079066
CVD mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Non-significant (p=0.13) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model;	Medium	2079066

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): 1.17 (1.06, 1.30) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant (two-sided $p < 0.05$);	Medium	2079066
Respiratory disease mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 67 (54-79); $p<0.01$Females: SMR (90% CI)44 (19-88); $p<0.05$ Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All-causes mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 99 (96-103); not significantFemales: SMR (90% CI)90 (84-97); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All-cause mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 94 (88-100); not significantFemales: SMR (90% CI)99 (85-114); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Respiratory disease mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 67 (54-79); p<0.01Females: SMR (90% CI)44 (19-88); p<0.05 Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All-causes mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 99 (96-103); not significantFemales: SMR (90% CI)90 (84-97); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All-cause mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 94 (88-100); not significantFemales: SMR (90% CI)99 (85-114); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 118 (98-137); not significantFemales: SMR (90% CI)110 (43-232); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
gastrointestinal cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 93 (81-106); not significantFemales: SMR (90% CI)98 (74-102); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other cancers mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 92 (79-105); not significantFemales: SMR (90% CI)85 (70-100); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 118 (98-137); not significantFemales: SMR (90% CI)110 (43-232); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other cancers mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 87 (66-108); not significantFemales: SMR (90% CI)119 (83-167); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other cancers mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 87 (66-108); not significantFemales: SMR (90% CI)119 (83-167); not significant Comments: Table 3	Low	3082792
Deaths from all causes other than cancer	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Expected: 116.5Observed: 99O/E: 0.85	Medium	158
Ratio of observed to expected deaths (calendar years)	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Total O/E: 0.85 Comments: This ratio represents the total across calendar year groupings of 61-66, 67-71, and 72-77. There were 99 deaths in this grouping.	Medium	158

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Ratio of observed to expected deaths in groupings of years from onset of exposure	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Years from onset of employment:ratio of observed to expected deaths20-29: 0.4230-39: 1.1640-49: 0.9150+: 0.59	Medium	158
Deaths from all causes other than cancer	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Expected: 116.5Observed: 99O/E: 0.85	Medium	158
Ratio of observed to expected deaths (calendar years)	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Total O/E: 0.85 Comments: This ratio represents the total across calendar year groupings of 61-66, 67-71, and 72-77. There were 99 deaths in this grouping.	Medium	158
Ratio of observed to expected deaths in groupings of years from onset of exposure	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Years from onset of employment:ratio of observed to expected deaths20-29: 0.4230-39: 1.1640-49: 0.9150+: 0.59	Medium	158
Deaths from all causes other than cancer	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Expected: 116.5Observed: 99O/E: 0.85	Medium	158

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Ratio of observed to expected deaths (calendar years)	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Total O/E: 0.85 Comments: This ratio represents the total across calendar year groupings of 61-66, 67-71, and 72-77. There were 99 deaths in this grouping.	Medium	158
Ratio of observed to expected deaths in groupings of years from onset of exposure	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Years from onset of employment:ratio of observed to expected deaths20-29: 0.4230-39: 1.1640-49: 0.9150+: 0.59	Medium	158
Ratio of observed to expected deaths in groupings of years from onset of exposure	Adults or general, Occupational; PESS included in study; Male; 544 men employed with at least 20 years employment in asbestos mines/ mills, Quebec, Canada, 35-69 years	Air (personal level), Air (area level) Mean general mill air concentrations: 9-35 f/mlRange among the five mills/mines; Asbestos - Chrysotile (serpentine): 12001-29-5	Expected/Observed: * /1 (death rate not available because mesothelioma is rare in the general population)O/E: - Comments: Table 5	Medium	158
All cause and pneumoconioses/lung diseases mortality were determined from death certificates from local health authorities using ICD-9 codes. Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Workers in varying occupational settings: (2010), Germany, 576 exposued referents (all male).	Occupational Fiber concentrations were categorized into <25, 25-50, and >50 fiber years. Fiber types included chrysotile and crocidolite.; Asbestos - Not specified: 1332-21-4, Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMR (95% CI) for all cause mortality = 0.59 (0.49-0.70). NO statistically significant results for pneumoconioses/other lung disease mortality.	Medium	3079156
All cause and pneumoconioses/lung diseases mortality were determined from death certificates from local health authorities using ICD-9 codes. Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Workers in varying occupational settings: (2010), Germany, 576 exposued referents (all male).	Occupational Fiber concentrations were categorized into <25, 25-50, and >50 fiber years. Fiber types included chrysotile and crocidolite.; Asbestos - Not specified: 1332-21-4, Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMR (95% CI) for all cause mortality = 0.59 (0.49-0.70). NO statistically significant results for pneumoconioses/other lung disease mortality.	Medium	3079156

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.	Medium	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Pleural cancer mortality ascertained from death certificates and/or population registers and coded according to ICD-9	Adults or general, Occupational; PESS included in study; Male; Balangero chrysotile open-air mine worker cohort: (1945-2014), Italy, 1056 males were included in the most recent follow-up	PCM Air (area level), Air (outdoor), Occupational Mean concentrations varied by year and job category. "Mean concentrations in drilling were 37± 10 fibre/mL up to 1950 and 5± 1 fibre/mL in 1971"1976" (Pira et al. 2017, HERO ID 5060134). Majority chrysotile, occasional presence of crocidolite, 0.2% "0.5% balangeroite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMRs for pleural cancer mortality were 5.84 (95% CI 1.20 - 17.1%), 2.76 (95% CI 0.07 - 15.4), and 7.72 (95% CI 1.59-22.6) for <100, 100-400, and >400 cumulative fiber-years, respectively in the most recent follow-up (p for linear trend = 0.76) (Pira et al. 2017, HERO ID 5060134).	Medium	3082492

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Ischemic heart disease mortality ascertained from death certificates and/or population registers and coded according to ICD-9	Adults or general, Occupational; PESS included in study; Male; Balangero chrysotile open-air mine worker cohort: (1945-2014), Italy, 1056 males were included in the most recent follow-up	PCM Air (area level), Air (outdoor), Occupational Mean concentrations varied by year and job category. "Mean concentrations in drilling were 37± 10 fibre/mL up to 1950 and 5± 1 fibre/mL in 1971"1976" (Pira et al. 2017, HERO ID 5060134). Majority chrysotile, occasional presence of crocidolite, 0.2% "0.5% balangeroite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMRs for ischemic heart disease mortality were 1.06 (95% CI 0.68 - 1.57), 0.89 (95% CI 0.55 - 1.35), and 0.76 (95% CI 0.49-1.13) for <100, 100-400, and >400 cumulative fiber-years, respectively in the most recent follow-up (p for linear trend = 0.26) (Pira et al. 2017, HERO ID 5060134).	Medium	3082492
total mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 3,946 Italian male geothermal workers in Larderello, 1950-1990, <80 years old	Occupational job exposure matrix Asbestos, EURELEX job exposure matrix, central tendency not reported.; Asbestos - Not specified: 1332-21-4	Total mortality inversely associated with asbestos exposure: SMR (95% CI) for 0 - <= 5,000 fibers/L/year = 86.4 (75.5 - 98.3); for > 5,000 fibers/L/year = 69.1 (52.0 - 89.9). Comments: Additional non-cancer SMRs are reported but are not associate with asbestos exposure. Other SMR results for asbestos are cancer outcomes.	Low	2964127
lung cancer mortality. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,526 white male asbestos textile plant workers in South Carolina, 1940-2001, attained age <50 - >80.	PCM Air (area level), Occupational Chrysotile asbestos, range of cumulative exposure (fiber-year/mL), <1.5 - >240.; Asbestos - Chrysotile (serpentine): 12001-29-5	Significantly increased risk of lung cancer mortality per 10 fiber-year/mL increase in cumulative asbestos exposure with 5, 10, and 15-year lags. ERR (95% CI); [5-year lag] = 0.015 (0.007, 0.027); [10-year lag] = 0.015 (0.007, 0.028); [15-year lag] = 0.015 (0.006, 0.029). Comments: Figure 2 provides predicted relative risks using two-stage clonal expansion models.	Medium	2238696
lung cancer mortality. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,526 white male asbestos textile plant workers in South Carolina, 1940-2001, attained age <50 - >80.	PCM Air (area level), Occupational Chrysotile asbestos, range of cumulative exposure (fiber-year/mL), <1.5 - >240.; Asbestos - Chrysotile (serpentine): 12001-29-5	Significantly increased risk of lung cancer mortality per 10 fiber-year/mL increase in cumulative asbestos exposure with 5, 10, and 15-year lags. ERR (95% CI); [5-year lag] = 0.015 (0.007, 0.027); [10-year lag] = 0.015 (0.007, 0.028); [15-year lag] = 0.015 (0.006, 0.029). Comments: Figure 2 provides predicted relative risks using two-stage clonal expansion models.	Medium	2238696

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality assessed by ICD codes on death records (Ferrante et al., 2020, HEROID: 6861719). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (2020), Italy, 953 subjects (all male) (Ferrante et al., 2020, HEROID: 6861719).	PCM Air (personal level), Air (area level), Occupational Cumulative exposure concentrations were broken into tertiles (Q1: <27 f/mL-y; Q2: 27-345 f/mL/y; Q3: >=346 f/mL-y) (Ferrante et al., 2020, HEROID: 6861719). Only chrysotile reported.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed (Ferrante et al., 2020, HEROID: 6861719).	Medium	178
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	Overall mortality rate was lower than the Greek general population; the SMR was 0.71 (95% CI 0.53"0.93). The age and smoking-adjusted HR for mortality was 1.02 (0.90"1.16) per 10-unit increase in fiber-years of exposure, and 0.92 (0.89"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Malignant neoplasm mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 1.15 (95% CI 0.77"1.67). The age and smoking-adjusted HR for mortality was 1.06 (0.89"1.28) per 10-unit increase in fiber-years of exposure, and 0.91 (0.87"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Diseases of circulatory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 0.77 (95% CI 0.49"1.16). Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 1.71 (95% CI 0.98"2.78). The age and smoking-adjusted HR for mortality was 1.08 (0.85"1.38) per 10-unit increase in fiber-years of exposure, and 0.89 (0.83"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cirrhosis mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR for cirrhosis calculated vs. the general Greek male population was 0.05 (95% CI 0.01"0.29). However, this analysis was based on n=1 cases. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Asbestosis mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2007), United States, 1,672 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for asbestosis mortality with a 15-year exposure lag:0.0-49.9 fiber/cc-years = 37.3 (7.5-122.3);50.0-249.9 fiber/cc-years = 212.6 (91.6-433.2);>=250.0 fiber/cc-years = 749.1 (373.0-1367.8); Comments: Sullivan et al. 2007 (HERO ID: 709497), Table 3	Medium	709497
Lung cancer determined using death certificates	Adults or general, Occupational; PESS included in study; Female, Male; Employees at or near a mine in Libby, Montana hired after 1959 (2014), United States, 880	PCM Air (area level), Occupational Median cumulative exposure of 3.4 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	Regression coefficient estimate for lung-cancer mortality = 5.8 per fiber/cc-year. Comments: Bateson et al. 2014 (HERO ID: 2238712), Table 2	Medium	709497
Lung cancer determined using death certificates	Adults or general, Occupational; PESS included in study; Female, Male; Employees at or near a mine in Libby, Montana hired after 1959 (2014), United States, 880	PCM Air (area level), Occupational Median cumulative exposure of 3.4 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	Regression coefficient estimate for lung-cancer mortality = 5.8 per fiber/cc-year. Comments: Bateson et al. 2014 (HERO ID: 2238712), Table 2	Medium	709497

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2010), United States, 1,662 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for all cause mortality with 15-year lag:0.00-4.49 fiber/cc-years = 1.14 (0.97-1.33);4.50-22.90 fiber/cc-years = 1.11 (0.95-1.28);23.00-99.00 fiber/cc-years = 1.23 (1.06-1.42);100.00+ fiber/cc-years = 1.40 (1.21-1.62);(All reported in text as statistically significant).Regression estimate (SE) for all cause mortality = 0.06 (0.011).Hazard ratio (95% CI) for all cause mortality = 1.06 (1.04-1.08). Comments: Moolgavkar et al. 2010 (HERO ID: 709457), Table II and IV.	Medium	709497
Non-malignant respiratory disease mortality determined using death certificates	Adults or general, Occupational; PESS included in study; Male; Employees at or near a mine in Libby, Montana (2010), United States, 1,662 (all male)	PCM Air (area level), Occupational Median cumulative exposure of 8.7 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	SMRs (95% CIs) for non-malignant respiratory disease mortality with 15-year lag:0.00-4.49 fiber/cc-years = 1.70 (1.00-2.68);4.50-22.90 fiber/cc-years = 1.97 (1.29-2.86);23.00-99.00 fiber/cc-years = 2.18 (1.44-3.18);100.00+ fiber/cc-years = 3.44 (2.46-4.68);(All reported in text as statistically significant).Regression estimate (SE) for non-malignant respiratory disease mortality = 0.13 (0.021).Hazard ratio (95% CI) for non-malignant respiratory disease mortality = 1.14 (1.09-1.18). Comments: Moolgavkar et al. 2010 (HERO ID: 709457), Table II and IV.	Medium	709497
Mortality for various diseases. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Other, Both male and female; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	Males:Total mortality: 300 deaths, SMR = 127 (95% CI: 113-142).Lung cancer: 39 deaths, SMR = 168 (95% CI: 119-230).Bladder cancer: 3 deaths, SMR = 523 (95% CI: 108-1,528).Prostate cancer: 8 deaths, SMR = 291 (95% CI: 126-573).Females: Total mortality: 121 deaths, SMR = 150 (95% CI: 124-179).Lung cancer: 13 deaths, SMR = 621 (95% CI: 331-1,062).Pancreas cancer: 4 deaths, SMR = 376 (95% CI: 102-963).	Medium	3080436
Mortality for various diseases. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): Male: 127 (113-142)Female: 150 (124-179) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Malignant neoplasm mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI):Males: 146 (118-179)Females: 159 (110-222) Comments: Information for males and females. Table 6 and 7	Medium	3080436

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive organs and peritoneum cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI):Males: 83 (47-135)Females: 118 (54-224) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 70 (23-163) Comments: Information for males only. Table 6	Medium	3080436
Rectum and anal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 77 (9-278) Comments: Information for males only. Table 6	Medium	3080436
Gallbladder cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 523 (108-1528) Comments: Information for males only. Table 6	Medium	3080436
Pancreas cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): Males: 118 (24-345)Females: 376 (102-963) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Respiratory and intrathoracic organ cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 168 (122-226) Comments: Information for males only. Table 6	Medium	3080436
Prostate cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 291 (126-573) Comments: Information for males only. Table 6	Medium	3080436

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Bladder cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 85 (10-307) Comments: Information for males only. Table 6	Medium	3080436
Kidney cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 113 (14-408) Comments: Information for males only. Table 6	Medium	3080436
Brain cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 150 (18-542) Comments: Information for males only. Table 6	Medium	3080436
Lymphatic and haematopoietic tissue cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 222 (81-483) Comments: Information for males only. Table 6	Medium	3080436
Endocrine and metabolic disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): Males: 63 (8-228)Females: 74 (9-267) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Circulatory system disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 93 (76-112) Comments: Information for males only. Table 6	Medium	3080436
Respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 789 (482-1219) Comments: Information for males and females. Table 6 and 7	Medium	3080436

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive system disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 192 (70-418) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Ill-defined condition mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 68 (27-140) Comments: Information for males only. Table 6	Medium	3080436
Breast cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 103 (21-301) Comments: Information for females only. Table 7	Medium	3080436
mesothelioma mortality Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; 72 Italians who had died from asbestos-related disease in Northern Italy, 2000-2018, age not reported	SEM-EDS Biomonitoring Biomonitoring matrix: lung tissue sample; Asbestos bodies, Median (ff/gdw) 6,292.0 from occupational exposure only.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Asbestos bodies concentration significantly different in those who died from mesothelioma compared with those who died from other asbestos-related diseases; Mann-Whitney t-test = 1.97, p-value = 0.0 [Mesothelioma, Median (IQR): 4,479.3 (0.0-50,535.7); No Mesothelioma, Median (IQR): 452,800 (0.0-664,502.8) Comments: Table 3	Low	7460031
mesothelioma mortality Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; 72 Italians who had died from asbestos-related disease in Northern Italy, 2000-2018, age not reported	SEM-EDS Biomonitoring Biomonitoring matrix: lung tissue sample; Asbestos bodies, Median (ff/gdw) 6,292.0 from occupational exposure only.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Asbestos bodies concentration significantly different in those who died from mesothelioma compared with those who died from other asbestos-related diseases; Mann-Whitney t-test = 1.97, p-value = 0.0 [Mesothelioma, Median (IQR): 4,479.3 (0.0-50,535.7); No Mesothelioma, Median (IQR): 452,800 (0.0-664,502.8) Comments: Table 3	Low	7460031

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cause mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	All cause mortality was not significantly associated with any category of asbestos exposure. 95% CI for highest exposure category includes null value. Adjusted HR (95% CI) = 1.41 (1.00, 1.98) for high exposure category. No significant associations for other exposure categories. P for trend = 0.024.	Medium	2638749

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	All cause mortality: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) =1.78 (1.62, 1.96); All cause mortality, miners versus control: Adjusted HR (95% CI): 2.09 (1.64, 2.66) Comments: Tables 2-3	Medium	2572504
All cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	All cancers: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 2.41 (2.02, 2.88); All cancers, miners versus control: Adjusted HR (95% CI): 3.22 (1.92, 5.41) Comments: Tables 2-3	Medium	2572504
GI cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	GI cancer: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 1.32 (1.01, 1.72); GI cancer, miners versus control: Adjusted HR (95% CI): 2.96 (1.39, 6.31) Comments: Tables 2-3	Medium	2572504

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Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Non-malignant respiratory disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	Non-malignant respiratory disease: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 2.98 (2.41, 3.69);Non-malignant respiratory disease, miners versus control: Adjusted HR (95% CI): 3.34 (1.76, 6.33) Comments: Tables 2-3	Medium	2572504

Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diseases of the circulatory system mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for diseases of the circulatory system mortality for cumulative dose groups:<10,000 f/cc days = 86, ns;10,000 - 40,000 f/cc days = 136, p < 0.05;40,000 - 100,000 f/cc days = 110, ns;100,000 - 200,000 f/cc days = 77, ns;Total = 105, ns Comments: Table 6-1	Medium	6884448
Circulatory system mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for circulatory disease over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 139. 1,000-10,000 fiber/cc-days: 112. 10,000-40,000 fiber/cc-days: 158 (p<0.05). 40,000-100,000 fiber/cc-days: 123. >100,000 fiber/cc-days: 157.	Medium	67

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Circulatory disease mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Circulatory disease SMR among workers without asbestosis (n=8) was lowered at 20 year latency (0.73 [0.30, 1.40], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=5) was elevated at 20 year latency (2.18 [0.70, 5.10], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers without asbestosis (n=7) was lowered at 25 year latency (0.96 [0.40, 2.00], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=3) was significantly elevated at 25 year latency (2.59 [0.50, 7.60], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers without asbestosis (n=1) was significantly elevated at 30 year latency (0.93 [0.02, 5.20], p-value unavailable), though not statistically significant.Circulatory disease SMR among workers with asbestosis (n=2) was significantly elevated at 30 year latency (1.50 [0.20, 5.40], p-value unavailable), though not statistically significant. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Relevant outcomes of all cause mortality, non-malignant respiratory disease, and ischemic heart disease were assessed utilizing Canadian national mortality databases and death registries, with confirmation by pathology and autopsy reports for some analyses. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Asbestos exposed (n=535, production and maintenance workers) and control (n=205) male employees (total n=740) of an asbestos cement pipe manufacturing factory with a minimum of one year employment who had been hired prior to 1960.	estimated from previous sampling results and extensive job history data The estimated average cumulative exposure of the production workers was about 60 fiber-years/mL (chrysotile and crocidolite). The estimated mean cumulative exposure within the board shop, in which chrysotile was the sole asbestos type utilized, was 39 f-y/mL.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In the period 20 years from first exposure, the production workers had a standardized mortality ratio of 181 for all causes of death, 320 for non-malignant respiratory disease, and 58 for ischemic heart disease.	Low	3083612

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cardiovascular disease mortality (ICD-8 390-458) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 100 (95% CI: 77-129)10-yr Latency (SMR): 108 (95% CI: 80-145) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Ischemic heart disease mortality (ICD-8 410-414) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 100 (95% CI: 73-135)10-yr Latency (SMR): 111 (95% CI: 79-156) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Diseases of the circulatory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Disease of circulatory system Deaths Observed: Group 1: 13; Group 2: 8; Group 3: 9; Group 4: 24; Group 5: 2Table III Total Disease of circulatory system Expected: Group 1: 5.33; Group 2: 5.66; Group 3: 4.03; Group 4:22.60; Group 5: 1.82		115
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cardiovascular diseases (390-459) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Cardiovascular diseases (390-459) mortality observed 124 deaths and expected 217.4. The statistically significant SMR (p<0.01) =57.1 (47.5, 68.0).	Medium	3078781
Ischemic heart diseases (410-414) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Ischemic heart diseases (410-414) mortality observed 41 deaths and expected 86.6. The statistically significant SMR (p<0.01) =47.3 (34.0, 64.2).	Medium	3078781
Circulation systems mortality	Adults or general; PESS included in study; Female, Male; Farmers from rural villages in Turkey which were tested for environmental asbestos in white soil	PCM Air (indoor), Air (outdoor) "The cumulative fiber count of the villagers during their lifespan ranged from 0.19 to 14.61 fiber-years/ml. Mean cumulativeexposure was 4.0 fiber-years/ml for women with a 52-year of median exposureduration and 2.7 fiber-years/ml for men with a 55-year of median exposure duration (p <0.001)."; Asbestos - Tremolite: 14567-73-8, Tremolite: 14567-73-8	Circulation systems mortality (n=81) SMRs were increased for both men and women in exposed villages. Men SMR= 1.16 (0.94-1.44) Women SMR= 1.14 (0.90-1.47)	Medium	2325159

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
CVD mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Non-significant (p=0.13) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model;	Medium	2079066
Ischemic heart disease mortality ascertained from death certificates and/or population registers and coded according to ICD-9	Adults or general, Occupational; PESS included in study; Male; Balangero chrysotile open-air mine worker cohort: (1945-2014), Italy, 1056 males were included in the most recent follow-up	PCM Air (area level), Air (outdoor), Occupational Mean concentrations varied by year and job category. "Mean concentrations in drilling were 37± 10 fibre/mL up to 1950 and 5± 1 fibre/mL in 1971"1976" (Pira et al. 2017, HERO ID 5060134). Majority chrysotile, occasional presence of crocidolite, 0.2% "0.5% balangeroite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMRs for ischemic heart disease mortality were 1.06 (95% CI 0.68 - 1.57), 0.89 (95% CI 0.55 - 1.35), and 0.76 (95% CI 0.49-1.13) for <100, 100-400, and >400 cumulative fiber-years, respectively in the most recent follow-up (p for linear trend = 0.26) (Pira et al. 2017, HERO ID 5060134).	Medium	3082492

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cardiovascular

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diseases of circulatory system mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 0.77 (95% CI 0.49"1.16). Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343

Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 214.8 (p-value < 1%)O/E: 20/9.3 Comments: This value extracted from Table 3.4.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years, > 20 years latency: 671.4 (p-value < 1%)O/E: 7/1.0 Comments: This value extracted from Table 3.9.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 214.8 (p-value < 1%)O/E: 20/9.3 Comments: This value extracted from Table 3.4.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years, > 20 years latency: 671.4 (p-value < 1%)O/E: 7/1.0 Comments: This value extracted from Table 3.9.	Medium	3100838

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR: 214.8 (p-value < 1%)O/E: 20/9.3 Comments: This value extracted from Table 3.4.	Medium	3100838
Lung cancer mortality (SMR)	Adults or general, Occupational; PESS included in study; Female, Male; 589 white male and female workers at a vermiculite mine/mill near Libby, Montana, USA, follow-up until December, 1981	PCM Midget impinger, membrane filter Air (area level), Occupational Average asbestos exposure: 196.3 f-y total; 200.3 f-y for males; 7.7 f-y for females; Asbestos- Libby amphibole: 1318-09-8, Tremolite: 14567-73-8, Actinolite: 12172-67-7	SMR, >399 fiber/cc-years, > 20 years latency: 671.4 (p-value < 1%)O/E: 7/1.0 Comments: This value extracted from Table 3.9.	Medium	3100838
Lung cancer. Study Design: Cross-Sectional	Occupational; PESS included in study; Other, Both; 90 patients operated on for pulmonary tumor in Helsinki, Finland. August 1988-January 1992.	TEM Fiber content in tissue samples Various types of asbestos were found in lung tissue samples. These were grouped into fiber size (<3 um, >3um).; Asbestos - Anthophyllite: 17068-78-9, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5	The location of the tumor in the lower lobe (lung) was explained by total fibers (OR (95% CI): 9.0 (2.3, 34.6)); fibers 3 micrometers or longer: 22.1 (3.9, 125); anthophyllite fibers: 14.6 (2.4, 83.4); crocidolite fibers: 7.0 (1.2, 41.2).	Medium	3081975
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=40 pleural mesothelioma cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Pleural mesothelioma (n=40) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 65 (57); 1980-89: 28 (21); 1990-94: 10 (26); overall: 39 (34).	Medium	709467

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Median geometric mean (GM) values of crocidolite in the lung (fibers/microgram) for n=10 peritoneal mesothelioma cases (Table 1) Study Design: Cross-Sectional	Occupational; PESS included in study; Female, Male; A subset (n=70: n=50 mesothelioma and n=20 deaths from other causes) with lung tissue samples from the original Nottingham Gas Mask cohort of n=1,154 employees who worked in a gas mask factory 1940-1945.	TEM Biomonitoring Biomonitoring matrix: lung tissue; The crocidolite counts ranged from 0 to 1,949 (mean 234, median 47) fibers/μg.; Asbestos - Crocidolite (riebeckite): 12001-28-4	Table 1: Lung fiber burdens decreased over time (year of death) for each outcome of mortality from pleural mesothelioma, peritoneal mesothelioma, other diseases, and all cause mortality. Peritoneal mesothelioma (n=10) Median (GM) crocidolite (fibers/microgram), for year of death before 1980: 135 (134); 1980-89: 393 (53); 1990-94: 167 (76); overall: 154 (71).	Medium	709467
Lung cancer Study Design: Case-Control	Adults or general, Occupational; PESS not included in study; Male; Cases (n = 41) and controls (n = 52) included males aged 40-80 years, living in the northern part of the French Lorraine region. Cases had histologically confirmed lung cancer.	JEM Occupational The study used four methods for exposure assessments: 1) an expert-based assessment (task-based questionnaire (TBQ) expertise), 2) an algorithm-based assessment (TBQ algorithm), 3) an expert based on all job questionnaires, and 4) a general populations asbestos job exposure matrix (JEM).;	The relationship between lung cancer and asbestos-exposure estimates was statistically significant when exposure estimated were based on the TBQ algorithm (OR1 (95% CI): 1.27 (1.15, 1.40); OR2 (95% CI): 1.18 (1.06, 1.31)); however, the relationship was not statistically significant when based on JEM.		3078093
Lung and pleural cancer mortality (death certificates) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 13-country cohort of 62,937 male pulp and paper industry workers employed for at least one year between 1945 and 1996, with a mean of 23.5 years of follow-up	Occupational Available fiber measurements, combined with information on probability of exposure in each mill, department, and time period, were used by industrial hygienists to estimate each worker's exposure. 22,468 (36%) workers were classified as ever exposed. Median exposure levels were: 15 years of exposure, 35 years since first exposure, and 0.09 fibers/cc-years for cumulative exposure. Cumulative exposure quartiles were: <= 0.1 fiber/cc-years, 0.02-0.09 fiber/cc-years, 0.10-0.77 fiber/cc-years, and 0.78+ fiber/cc-years.; Asbestos - Not specified: 1332-21-4	Death certificates identified 24 pleural cancers (14 in exposed, 10 in unexposed workers). Follow-up time may have been insufficient to identify risk given the long latency for pleural cancers. Exposure misclassification (non-differential) was postulated as some of these cases occurred among maintenance and repair workers. Adjusted relative risks (95% CI) were: 2.93 (1.03-6.23) for ever exposure; 3.54 (0.66-18.8) for >35 vs 1.-3 years of exposure; and 2.06 (0.30-14.3) for 44+ vs 1-24 years since first exposure. For cumulative exposure, RRs for increasing quartiles were: 1.16 (0.25-5.37), 1.66 (0.34-8.23) and 2.43 (0.43-13.63). The association between the top quartile of cumulative exposure and lung cancer risk was 1.44 (0.85-2.45); associations were null for years of exposure and years since first exposure. Despite limitations in exposure and outcome measures, this study suggests that the carcinogenic effect of asbestos can be detected among workers employed in industries such as the pulp and paper industry, in which it is not considered to be a major hazard.	Medium	3080500

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality (death certificates) Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 13-country cohort of 62,937 male pulp and paper industry workers employed for at least one year between 1945 and 1996, with a mean of 23.5 years of follow-up	Occupational Available fiber measurements, combined with information on probability of exposure in each mill, department, and time period, were used by industrial hygienists to estimate each worker's exposure. 22,468 (36%) workers were classified as ever exposed. Median exposure levels were: 15 years of exposure, 35 years since first exposure, and 0.09 fibers/cc-years for cumulative exposure. Cumulative exposure quartiles were: <= 0.1 fiber/cc-years, 0.02-0.09 fiber/cc-years, 0.10-0.77 fiber/cc-years, and 0.78+ fiber/cc-years.; Asbestos - Not specified: 1332-21-4	Death certificates identified 24 pleural cancers (14 in exposed, 10 in unexposed workers). Follow-up time may have been insufficient to identify risk given the long latency for pleural cancers. Exposure misclassification (non-differential) was postulated as some of these cases occurred among maintenance and repair workers. Adjusted relative risks (95% CI) were: 2.93 (1.03-6.23) for ever exposure; 3.54 (0.66-18.8) for >35 vs 1.-3 years of exposure; and 2.06 (0.30-14.3) for 44+ vs 1-24 years since first exposure. For cumulative exposure, RRs for increasing quartiles were: 1.16 (0.25-5.37), 1.66 (0.34-8.23) and 2.43 (0.43-13.63). The association between the top quartile of cumulative exposure and lung cancer risk was 1.44 (0.85-2.45); associations were null for years of exposure and years since first exposure. Despite limitations in exposure and outcome measures, this study suggests that the carcinogenic effect of asbestos can be detected among workers employed in industries such as the pulp and paper industry, in which it is not considered to be a major hazard.	Medium	3080500

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pulmonary asbestos fiber burden Study Design: Cross-Sectional	Adults or general, Occupational; PESS included in study; Other, Male and Female; Individuals from the Pacific Northwest who have worked shipyard or asbestos insulation professions or other related trades at some point in time (n=144). Autopsy lungs from these individuals represent cases received by the authors' lab from 1981 to 1991. 8 cases had no asbestos-related disease.	fiber morphology and fiber chemistry Occupational Mean exposure to asbestos was 20 years with the range being between <1 - 50 years. Exposure levels are not provided.; Asbestos - Amosite (grunerite): 12172-73-5, Tremolite: 14567-73-8, Chrysotile (serpentine): 12001-29-5	Mean amosite fiber concentration (million fibers/ g dry lung) in subjects with lung cancer (n=32) compared to those with no disease (n=8): Disease= 1.1 (SD: 8.3); No disease= 0.67 (SD: 5.1); (t-test p =0.53, multiple regression model accounting for presence of >1 disease [MLR] p =0.20)Mean chrysotile fiber concentration in subjects with lung cancer compared to those with no disease:: Disease= 0.031 (SD: 150); No disease= 0.035 (SD: 81); (t-test p =0.95, MLR p =0.30)Mean tremolite fiber concentration in subjects with lung cancer compared to those with no disease: Disease= 0.21 (SD: 13); No disease= 0.079 (SD: 85); (t-test p =0.43, MLR p =0.31)Regression coefficient for amosite with standard error: -0.63 (0.49), not statistically significantRegression coefficient for chyrsotile with standard error: 1.47 (1.39), not statistically significantRegression coefficient for tremolite with standard error: 1.03 (1.02), not statistically significantMean amosite fiber length (microgram) with lung cancer compared to those with no disease: Disease= 5.7; No disease= 4.6; (t-test p =0.39, MLR p =0.73)Mean amosite aspect ratio with lung cancer compared to those with no disease: Disease= 39; No disease= 36; (t-test p =0.80, MLR p =0.50)	Medium	758904
Mesothelioma Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Mesothelioma patients: tremolite, geometric mean = 180 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 34 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of mesothelioma cases than reference group. Cases = 180 vs. reference = 9 (10^ 8 fiber/g dry lung). Chrysotile concentrations were significantly higher in samples of mesothelioma cases than reference group. Cases = 34 vs. reference = 9 (10^ 8 fiber/g dry lung). Comments: Table 3, Table 5	Uninformative	1481523

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer Study Design: Cross-Sectional	Occupational; PESS included in study; Other, NR; Miners and Millers from Thetford Mines (1981-1990), United States, 94 adults.	TEM Autopsy lungs Lung cancer patients: tremolite, geometric mean = 49 (10^ 8 fiber/g dry lung); chrysotile, geometric mean = 13 (10^ 8 fiber/g dry lung)Subjects without asbestos-related disease: geometric mean = 9 (10^ 8 fiber/g dry lung); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Tremolite concentrations were significantly higher in samples of mesothelioma cases than reference group. Cases = 49 vs. reference = 9 (10^ 8 fiber/g dry lung). Comments: Table 3	Uninformative	1481523
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestosis and lung cancer Study Design: Cohort (Retrospective), Case-Control, Case-Control (Nested)	Adults or general, Occupational; PESS included in study; Male; Of 6500 known employees of the Australian Blue Asbestos Company between 1943 and 1966, 2928 occupational workers from this asbestos company (men and women) responded to a survey. "Satisfactory replies were received from 2400 men and 149 women". 2400 of those respondents were men and were included in the cohort for this study.	A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites in 1966. Supplemented by subjective ranking of level of dust.iness Air (area level), Occupational "A survey of airborne respirable fibres of crocidolite greater than 5Mm in length was carried out at various work sites at Wittenoom in 1966. These measurements were used to obtain estimates of fibre concentrations for all 87 job categories in the various worksites." This survey was supplemented by subjective ranking of the degree of dustiness provided by an ex-superintendent of operations at Wittenoom, and verified by the industrial hygienist who conducted the 1966 survey. Mean cumulative exposure (f/ml-years) was 49 for cases, and 26 for controls.; Asbestos - Crocidolite (riebeckite): 12001-28-4	40 cases of lung cancer, 66 cases of compensatable asbestosis, with incidence of both lung cancer and asbestosis greatest in subjects with highest levels of exposure to crocidolite and in ex-smokers. Mean duration of exposure to crocidolite for cases of lung cancer was nearly twice that of the control subjects (table 1). The relative risk of lung cancer was also significantly related to cumulative exposure to crocidolite. The mean duration of exposure to crocidolite was nearly three times as high in the 66 subjects with asbestosis as in the 2647 control subjects (table 4).	Low	3082378
Malignant mesothelioma mortality Study Design: Case-Control	Occupational; PESS included in study; Male; Males previously employed at the Wittenoom Gorge from 1943-1966, who completed radiographs at the Perth Chest Clinic after starting work at the gorge.	provides concentrations of airborne respirable fibres greater than 5u from 1966. Tool of measurement not stated Air (area level), Air (indoor) Cumulative exposure (f/mL-years), or by radiographic results (abnormal); Asbestos - Crocidolite (riebeckite): 12001-28-4	Significant results reported for relative risk of malignant mesothelioma mortality from asbestos exposure by profusion 1.9 (1.3, 2.9 pvalue 0.002) and by log cumulative exposure 2.5 (1.6, 4.0 pvalue <0.001). (table 3)Mesothelioma was found to be nearly double the relative risk of asbestosis and other causes of death in cumulative exposure (figure 1)	Medium	3081932

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for lung cancer mortality for cumulative dose groups:<10,000 f/cc days = 223, $p < 0.05$;10,000 - 40,000 f/cc days = 367, $p < 0.01$;40,000 - 100,000 f/cc days = 978, $p < 0.01$;100,000 - 200,000 f/cc days = 5,000, $p < 0.05$;Total = 399, $p < 0.01$ Comments: Table 6-1	Medium	6884448
Digestive system cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for digestive system cancer mortality for cumulative dose groups:<10,000 f/cc days = 37, ns;10,000 - 40,000 f/cc days = 162, ns;40,000 - 100,000 f/cc days = 380, ns;100,000 - 200,000 f/cc days = - (no observed deaths);Total = 127, ns Comments: Table 6-1	Medium	6884448
Lung cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	SMRs for lung cancer mortality over categories of increasing cumulative exposure were as follows. <1,000 fiber/cc-days: 140. 1,000-10,000 fiber/cc-days: 279 ($p<0.05$). 10,000-40,000 fiber/cc-days: 352 ($p<0.05$). 40,000-100,000 fiber/cc-days: 1099 ($p<0.05$). >100,000 fiber/cc-days: 1818 ($p<0.05$).	Medium	67

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive system cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed.	Medium	67
mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	Mesothelioma mortality positively associated with exposure among workers when compared with the US general population; SMR (95% CI) = 10.5 (1.3-38.0), p-value<0.05. Comments: SMR were age and calendar year adjusted.	Low	1066036
Cancer of the lung, trachea, and bronchus mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the lung, trachea, and bronchus mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 0.9 (0.5-1.5). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mortality from all cancers Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for all cancer mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 0.9 (0.7-1.3). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036
Cancer of the digestive system and peritoneum mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the digestive system and peritoneum mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 1.1 (0.6-1.9). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036
Lung cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	The relative risk for lung cancer in the highest average exposure level tertile was four times that of the lowest (HR, 95% CI = 3.99, 1.15-13.86) (Clin et al. 2011, HERO ID: 3078903). No significant results for cumulative exposure index analyses.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Esophagus cancer and colon-rectum cancer Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Men and women from an asbestos reprocessing plant (textiles and friction materials) from the south of the Calvados department in Normandy, France. Eligibility was based on three factors: (1) alive in 1978, (2) worked for at least one year in the plant, and (3) resided in Calvados during most of the study period. 2	PCM The first dust accumulation device (used from 1960-1974) was created by Avy-Raillere-Martin (ARM). This measurement provided the total number of particles per litre of air. A second measurement device, CASELLA, was used after 1974. CASELLA uses a membrane filter method and phase contrast microscopy (PCM) to provide results in fibres per mL (minimum fibre length of 5 um and less thatn 3um in diameter). Air (area level), Occupational In Boulander et al, (2015) (1) CEI in <=80 or >80 fibres/mL*years and (2) exposure duration <=25 years and >25 years (Boulanger et al., 2015, HEROID 3077730). In Clin et al (2011), exposure duration is provided in years (with a lag of 10 years) by <10 years, >=10-<25 years, and >=25-<48 years of exposure. CEI is provided for measures with a lag of 10 years by <40, >=40-<140, and >=140-853 fibres/mL*years. AEL is provded with a lag of 10 years for <3, >=3-<9, and >=9-107 fibres/mL (Clin et al., 2011, HEROID 3078903).In de la Provote et al (2002) (1) mean exposure concentrations (MEC) <3,3-9, and>=9 fibres/mL, (2) CEI <50, 50-124, 125-249, and >=250 fibres/mL*years, and (3) years worked for the company <10, 10-20, and >=20 years.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In Boulanger et al. (2015), a significant increased SIR (95% CI) were observed in both men and women for esophagus cancers in CEI >80 fibes/mL*year. men: 1.90 (1.16 to 2.94)women: 74.8 (24.1 to 174)No significant hazard ratio results were observed for colon-rectum cancer or esophagus cancer in Clin et al., 2011, HEROID 3078903.No significant SIR results were observed for colon-rectum cancer or esophagus cancer in de la Provote et al., 2002, 3520580.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Prostate cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at Calvados-area asbestos factories: (2011), France, 1604 workers (male) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Skin cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Ear/nose/throat (ENT) cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Bladder and kidney cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Esophagus cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Esophagus cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female; Workers at Calvados-area asbestos factories: (2011), France, 420 workers (female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Esophagus cancer and colon-rectum cancer Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Men and women from an asbestos reprocessing plant (textiles and friction materials) from the south of the Calvados department in Normandy, France. Eligibility was based on three factors: (1) alive in 1978, (2) worked for at least one year in the plant, and (3) resided in Calvados during most of the study period. 2	PCM The first dust accumulation device (used from 1960-1974) was created by Avy-Raillere-Martin (ARM). This measurement provided the total number of particles per litre of air. A second measurement device, CASELLA, was used after 1974. CASELLA uses a membrane filter method and phase contrast microscopy (PCM) to provide results in fibres per mL (minimum fibre length of 5 um and less thatn 3um in diameter). Air (area level), Occupational In Boulander et al, (2015) (1) CEI in <=80 or >80 fibres/mL*years and (2) exposure duration <=25 years and >25 years (Boulanger et al., 2015, HEROID 3077730). In Clin et al (2011), exposure duration is provided in years (with a lag of 10 years) by <10 years, >=10-<25 years, and >=25-<48 years of exposure. CEI is provided for measures with a lag of 10 years by <40, >=40-<140, and >=140-853 fibres/mL*years. AEL is provded with a lag of 10 years for <3, >=3-<9, and >=9-107 fibres/mL (Clin et al., 2011, HEROID 3078903).In de la Provote et al (2002) (1) mean exposure concentrations (MEC) <3,3-9, and>=9 fibres/mL, (2) CEI <50, 50-124, 125-249, and >=250 fibres/mL*years, and (3) years worked for the company <10, 10-20, and >=20 years.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	In Boulanger et al. (2015), a significant increased SIR (95% CI) were observed in both men and women for esophagus cancers in CEI >80 fibes/mL*year. men: 1.90 (1.16 to 2.94)women: 74.8 (24.1 to 174)No significant hazard ratio results were observed for colon-rectum cancer or esophagus cancer in Clin et al., 2011, HEROID 3078903.No significant SIR results were observed for colon-rectum cancer or esophagus cancer in de la Provote et al., 2002, 3520580.		3520580

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Pleural malignant mesothelioma measured using morphological confirmation of diagnosis. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Residents of Casala Monferrato and the surrounding area: (2001-2006), Italy, 223 cases and 348 controls	TEM Air (area level), Occupational No central tendency provided - in analysis groups are presented from less than 1 f/ml-year to greater than 10 f/ml-years. Majority chrysotile and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Adjusted odds ratio (95% CI) for PMM in exposure groups compared to the background level of (<0.1 f/ml-years):>=0.1-<1 f/ml-years = 4.4 (1.7, 11.3);>=1-<10 f/ml-years = 17.5 (7.3, 41.8);>=10 f/ml-years = 62.1 (22.2, 173.2) Comments: Table 2, all subjects	Medium	3008803

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency; Cumulative exposure from first exposure; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Lung cancer SMR among workers without asbestosis (n=12) was significantly elevated at 20 year latency (5.53 [2.86-9.66], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=4) was significantly elevated at 20 year latency (9.96 [2.71, 25.50], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 20 year latency due to overlap in CIs.Lung cancer SMR among workers without asbestosis (n=9) was significantly elevated at 25 year latency (5.81 [2.66-11.00], p-value unavailable).Lung cancer SMR among workers with asbestosis (n=2) was significantly elevated at 25 year latency (9.20 [1.11-33.00], p-value unavailable). No significant difference between lung cancer SMRs among workers with and without asbestosis at 25 year latency due to overlap in CIs.No reported lung cancer deaths among workers without asbestosis at 30-year latency.Lung cancer SMR among workers with asbestosis (n=2) was elevated at 30 year latency but was not statistically significant (7.46 [0.90-27.00], p-value unavailable). Lung cancer SMRs increase with increasing 18-year cumulative exposure groups: <50 f-y/ml=5.76 (0.70, 21.00); 50"99 f-y/ml= 5.51 (1.80"12.90); 100"149 f-y/ml= 9.60 (3.90"20.00); 150"199 f-y/ml= 6.87 (1.40"20.00); 200 and over f-y/ml= 9.06 (1.90"26.00). though no statistical difference between the groups.Lung cancer SMR among smokers (n=14): 6.44, and nonsmokers (n=3): 6.18, though no statistical difference between the two groups.Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 1.40 (p=0.58) comapred to those without asbestosis.Time-dependent Cox regression analysis: Age was significantly associated with lung cancer risk. Relative risk for lung cancer for workers with asbestosis = 2.30 (p=0.15, 1-tailed p = 0.07) comapred to those without asbestosis. Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Digestive cancer SMR among workers without asbestosis (n=8) was significantly (according to author) elevated at 20 year latency (4.34, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was significantly (according to author) elevated at 20 year latency (2.76, CI unavailable, p-value unavailable).Digestive cancer SMR among workers without asbestosis (n=7) was elevated at 25 year latency (5.50, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was elevated at 25 year latency (5.32 CI unavailable, p-value unavailable). Significance unknownNo reported digestive cancer deaths among workers without asbestosis at 30-year latency.Digestive cancer SMR among workers with asbestosis (n=3) was elevated at 30 year latency (13.20, CI unavailable, p-value unavailable). Significance unknown Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) and 420 lung cancer patients as controls	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Odds Ratio mesothelioma:lung cancer (95% CI):0 (reference) 1.000.025 - million asbestos fibers longer than 5 um per dry gram = 2.12 (0.82 - 5.49)0.05 - million asbestos fibers longer than 5 um per dry gram = 4.70 (2.38 - 9.25)0.2 - million asbestos fibers longer than 5 um per dry gram = 15.31 (5.89 - 39.8)0.5 - million asbestos fibers longer than 5 um per dry gram 21.88 (6.52 - 73.4)>= 1.0 million asbestos fibers longer than 5 um per dry gram = 35.00 (7.22 - 169.6)		3077660

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma as determined by healthcare providers Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; MALCS case-control study (2001-2006), United Kingdom, 622 mesothelioma patients (512 males, 110 females) and 420 lung cancer patients as controls	TEM Biomonitoring, Occupational Biomonitoring matrix: lung tissue; Mean lung burden for mesothelioma: 0.430 mf/g; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Tremolite: 14567-73-8, Anthophyllite: 17068-78-9	Odds Ratio mesothelioma:lung cancer (95% CI):0 (reference) 1.000.025 - million asbestos fibers longer than 5 um per dry gram = 2.12 (0.82 - 5.49)0.05 - million asbestos fibers longer than 5 um per dry gram = 4.70 (2.38 - 9.25)0.2 - million asbestos fibers longer than 5 um per dry gram = 15.31 (5.89 - 39.8)0.5 - million asbestos fibers longer than 5 um per dry gram 21.88 (6.52 - 73.4)>= 1.0 million asbestos fibers longer than 5 um per dry gram = 35.00 (7.22 - 169.6)		3077660
Lung cancer, ascertainment method not described Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; Green et al., 1997 (HERO ID 7837) examined the association between estimated lifetime cumulative and total lung burden of asbestos at death with pulmonary fibrosis (asbestosis) within a necropsy population (n=54) of former workers working at least one month (males) or six months (females) between 01 January 1940 and 31 December 1975 in a chrysotile asbestos textile plant in South Carolina and age at death, sex, hospital, and year of death matched controls. Asbestos worker age at death for males, median (quartiles): 56.0 (49.0-61.0), females: 57.0 (55.0-63.5); Control age at death for males, median (quartiles): 59.0 (49.3-62.0), females: 62.5 (59.3-65.0).	estimated from measured dust concentrations estimated Lifetime cumulative exposure (fibers > 5 μm/mL3 x years employed = fiber-years): median (quartiles): 30.2 (5.8-108.6); mean (quartiles): 4.7 (3.2-7.4). Dominant fiber type was chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Amosite (grunerite): 12172-73-5, Anthophyllite: 17068-78-9	Green et al., 1997 (HERO ID 7837) found that lifetime cumulative exposure to asbestos was significantly higher in workers with lung cancer (n=10, lifetime cumulative exposure geometric mean: 94.6 fiber-years) than workers without lung cancer (n=43, lifetime cumulative exposure geometric mean: 21.3 fiber-years), p=0.03.	Medium	7837
All cancer mortality (ICD-7 140-209) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 122 (95% CI: 88-171)10-yr Latency (SMR): 140 (95% CI: 95-203) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Gastrointestinal cancer mortality (ICD-8 150-159) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 131 (95% CI: 72-220)10-yr Latency (SMR): 145 (95% CI: 72-260) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Respiratory cancer mortality (ICD-8 160-163) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 153 (95% CI: 73-280)10-yr Latency (SMR): 130 (95% CI: 48-284) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Gastrointestinal tract tumors (ICD-7 150-158) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 127 (95% CI: 78-202)10-yr Latency (SMR): 133 (95% CI: 70-213) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Liver and bile duct tumors (ICD-7 155) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 189 (95% CI: 23-684)10-yr Latency (SMR): 244 (95% CI: 30-880) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Respiratory tract tumors (ICD-7 160-164) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 213 (95% CI: 127-346)10-yr Latency (SMR): 195 (95% CI: 97-349) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Nose and sinus tumors (ICD-7 160) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 448 (95% CI: 11-2500)10-yr Latency (SMR): 803 (95% CI: 20-4470) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Larynx tumors (ICD-7 161) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 391 (95% CI: 81-114)10-yr Latency (SMR): 549 (95% CI: 113-1610) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pluera tumors (ICD-7 162-164) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 186 (95% CI: 99-318)10-yr Latency (SMR): 141 (95% CI: 57-290) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Prostate tumors (ICD-7 177) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 170 (95% CI: 85-304)10-yr Latency (SMR): 191 (95% CI: 91-351) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Brain tumors (ICD-7 193.0) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 229 (95% CI: 84-498)10-yr Latency (SMR): 258 (95% CI: 70-660) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
All tumors (ICD-7 140-209) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 128 (95% CI: 101-161)10-yr Latency (SMR): 138 (95% CI: 105-181) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Laryngeal cancer ascertained by the following ICD-10 classification codes: C32.0-C32.3 and C32.8-C32.9. Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; Male and female participants from five separate INHANCE case-control studies with available occupational histories from 1989 to 2007: (2020), Western Europe, Latin America, France, and Germany. 2256 cases and 7857 controls.	PCM electron microscopy for data from Germany (Peters et al., 2016 3531308) Air (area level), Occupational Individual exposure measurements were assigned using a SYN-JEM. Median cumulative exposure was 0.98 f/ml-years and 0.28 f/ml-years in male and female cases, respectively. In controls, it was 0.56 f/ml-years and 0.35 f/ml-years in males and females, respectively. (see Table 2);	Adjusted odds ratios for laryngeal cancer per increasing cumulative exposure (Model 2) in males:<50th percentile of exposure vs. no exposure = 1.1 (0.91-1.3);50th-75th percentile of exposure vs. no exposure = 1.1 (0.93-1.13);75th-90th percentile of exposure vs. no exposure = 1.1 (0.88-1.3);>90th percentile of exposure vs. no exposure = 1.3 (1.0-1.6);p test for trend = 0.04.Adjusted odds ratios for laryngeal cancer per increasing cumulative exposure (Model 2) in females:<50th percentile of exposure vs. no exposure = 1.3 (0.66-2.5);>=50th percentile of exposure vs. no exposure = 0.83 (0.38-1.8). Comments: Tables 3 and 4		6775698

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma: incidence and mortalityMortality: all-cause, lung cancer, other cause-specificCancer incidence: all neoplasms, lung/respiratory cancers, other cause-specific Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Children (2-18y); PESS included in study; Female, Male; These studies analyzed a cohort of nearly 5,000 individuals who had lived in Wittenoom, Australia for ≥1 month from 1943-1993. Asbestos workers were excluded. Cohort size varied slightly with updates over time, including 4,768 participants (2608 women, 2160 men) at the end of 2000, and about 2,560 individuals exposed as children <15y in 2007 (Reid et al. 2008, 709466; Reid et al 2007, 709501; Reid et al 2012, 2088306).	TEM, PCM SEM, extrapolation based on dust exposure history Air (personal level), Air (area level) In the most recent study geometric mean (IQR) for estimated cumulative exposure was 3.02 (1.4-7.70) f/mL-years in persons who had been exposed as children, and 2.05 (0.90-5.75) f/mL-years in persons exposed only as adults (Reid et al. 2018, 6869529).; Asbestos - Crocidolite (riebeckite): 12001-28-4	For mesothelioma, the HR (95%) CI per 10 f/mL-years increase in exposure was 3.10 (2.11 to 4.53) in the most recent paper (Reid et al. 2018, 6869529). Hazard ratios for lung cancer reported in several papers were not significant. SMRs and/or SIRs were significant for mesothelioma, as well as a few additional outcomes, including "signs/symptoms ill-defined" mortality among women exposed in childhood, leukemia incidence and nervous system mortality in men exposed as children, and pneumoconiosis mortality in women (based on n=2 cases). Comments: This large cohort of residentially but not occupationally exposed individuals included 119 cases of mesothelioma by 2014. Analyses examined gender and age at exposure differences. There are concerns regarding exposure measurement error, particularly prior to 1966 when mining ceased: a single value based on expert judgment was extrapolated backward for the entire duration as no fiber measures had been taken. Exposure measurement error may be differential for mesothelioma cases who had detailed residential and work histories, while duration of residence was estimated from limited public records for half of the remaining cohort. There was about 20% loss to follow-up. Several SMRs/SIRs reached significance using a censoring method that might over-estimate associations, but not the alternative approach.	Medium	709618
Respiratory malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.31;25-49 mppcf-years = 2.00, $p < 0.05$;50-99 mppcf-years = 1.81, $p < 0.05$;>=100 mppcf-years = 2.31, $p < 0.01$. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 0.95;6-24 mppcf-years = 1.17;25-49 mppcf-years = 1.41;50-99 mppcf-years = 1.51, $p < 0.05$;>=100 mppcf-years = 1.37 Comments: Tables 8 and 9	Medium	281
Digestive cancer mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Stomach malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Oesophagus malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Colon and rectum malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Kidney or bladder malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Other digestive malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Lymphatic malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Residual cancer (includes buccal cavity, larynx, prostate, and pharynx) mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.15;25-49 mppcf-years = 1.71;50-99 mppcf-years = 2.31, $p < 0.05$;>=100 mppcf-years = 0.86. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Asbestos-related lung cancer measured via medical records Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS not included in study; Female, Male; Asbestos-related lung cancer patients (n=152) and non-asbestos-related lung cancer patients (n=431) that were treated in hospitals through Japan from 1997 to 2007.	PCM Biomonitoring Biomonitoring matrix: Dry lung tissue; 62% of 73 operated or autopsied patients with asbestos-related lung cancer had more than 5,000 particles per gram in the lung; 100% of patients with non-asbestos related lung cancer had a median of 554 particles per gram in the lung. Fiber type non-specified.; Asbestos - Not specified: 1332-21-4	In the multivariate analysis, asbestos was not statistically significant in the prognosis of asbestos and non-asbestos-related lung cancer, beta (95% CI) = 1.051 (0.816, 1.353), p-value = 0.699.	Uninformative	3079077
lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Lung cancer Deaths Observed: Group 1: 12; Group 2: 5; Group 3: 2; Group 4: 6; Group 5: 2Table III Total Lung cancer Deaths Expected: Group 1: 1.18; Group 2: 1.57; Group 3: 1.35; Group 4: 6.41; Group 5: 0.24		115
other neoplasms mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; For Knox et al., 1968, a total of n=878 asbestos textile workers were available for this study with follow-up over 50 years from 1916 through the end of June 1966	magnification provided in text indicates PCM Air (personal level) Mean asbestos dust fiber levels for Knox et al., 1968 were reported in Table 1 for various factory departments for the years 1961 and 1966 and ranged from 1 to 8 fibers/ c.c.;	Table III Total Other neoplasms Deaths Observed: Group 1: 5; Group 2: 3; Group 3: 1; Group 4: 4; Group 5: 1Table III Total Other neoplasms Deaths Expected: Group 1: 2.61; Group 2: 2.38; Group 3: 1.55; Group 4:9.13; Group 5: 2.72		115

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer mortality ascertained from death certificates.	Adults or general, Occupational; PESS included in study; Female, Male; Workers from four asbestos textile mills: (1940-2003), North Carolina and South Carolina, 6136 exposed (3717 men and 2419 women)	TEM Air (area level), Air (indoor), Occupational Exposure was assessed based on diameter (four categories) and length (six categories). The median cumulative exposure across the combined cohort was 8.2 f-y/ml (Elliott et al. 2012, HERO ID 1247861). Majority chrysotile, some amosite and crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	The log rate of lung cancer mortality increased by 0.39 per IQR (95% CI: 0.02-0.057, p=0.001) for total TEM fibers.Fibers 5 - 10 um long and <0.25 um in diameter were associated most strongly with lung cancer mortality (log rate 4% per IQR, p<0.001).	High	1257856
Pleural cancer mortality assessed using ICD codes	Adults or general, Occupational; PESS included in study; Female, Male; North Carolina cohort of textile workers (1950-2003), USA, n = 5397	PCM Midget impingers Air (area level), Occupational Mean cumulative exposure 79.1 fiber-years/mL, Range <0.1 - 5677.9 fiber-years/mL for follow-up from 1950-2003, chrysotileMean cumulative exposure 35.9 fiber-years/mL, Range 0.1-1271.1 fiber-years/mL for follow-up from 1999-2003, chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	"Positive, statistically significant associations were observed between mortality from all pleural cancer (including mesothelioma) and time since first exposure (TSFE) to asbestos (rate ration [RR], 1.19; 95% CI, 1.06-1.34 per year), duration of exposure, and cumulative exposure (RR, 1.15; 95% CI, 1.04-1.28 per 100 f-years/mL; 10-year lag)." Comments: This study was evaluated for mesothelioma in Asbestos Part 1.	High	5160027

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Prevalent Malignant Pleural Mesothelioma identified through a multi-step screening process. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; The study population comprised 3 groups of adults >20y of age: an environmentally exposed group residing in 6 communities located from 100 meters to 2.5 km from an asbestos plant (n=2913); active workers at the plant with employment duration ranging from 0-10 to >40 years (n=487); and residents in an agricultural community 45 km from the plant (n=979).	PCM Air (area level), Air (outdoor) Exposure was measured using air samples collected in the asbestos factory and in outdoor ambient air in the residential communities. Concentrations (fibers/cc) were quantified based on PCM counts of fibers > 5 μm using samples collected on membrane filters; duration of residence or employment data were collected. Mean concentrations were: 0.59 f/mL-years for the occupationally exposed with higher levels in selected areas; concentrations from 0.021 f/mL (2.5 km from plant) to 2.16 f/mL (100m from plant) for the environmentally exposed; and 0.0021 f/mL for the comparison group.; Asbestos - Chrysotile (serpentine): 12001-29-5	No multivariable adjusted results. –Prevalence of mesothelioma in environmentally exposed subjects by increasing mean distance [fiber concentration] of residential area from asbestos factory: 100m [2.16 f/mL] = 4.5% (39/873); 800m [0.04 fibers/mL] = 2.6% (17/644); 1 km group a [0.021 fibers/mL] =2.4% (8/335), 1km group b [0.021 fibers/mL] =2.2% (9/412); 2km [0.025 fibers/mL] =1.9% (6/318), 2.5 km [0.021 fibers/mL] = 1.2% (4/331). –Relative risk of mesothelioma for any vs no asbestos exposure in the full study population: 25.68 (Table 6, no 95% CI reported); only n=1 case in unexposed group. –Prevalence of mesothelioma in the full study population by intensity of exposure: <0.5 f/mL = 1.3% (45/3395); >0.75 f/mL = 4.5% (43/984). –Prevalence of mesothelioma in the full study population by estimated cumulative exposure: <7 f/mL-years = 1.4% (45/3175); 7.01 to 20 fibers/mL years - 0% (0/139); >20 f/mL years = 4.0% (43/1065) –Prevalence of mesothelioma in environmentally exposed females by duration of residence: 0-10y = 0% (0/122), 11-20y = 2.3% (3/129), 21-30y = 4.9% (7/142), 31-40y = 3.2% (10/311), >40y = 5.7% (34/593). –Prevalence of mesothelioma in environmentally exposed males by duration of residence: 0-10y = 0% (0/261), 11-20y = 0.6% (2/349), 21-30y = 1.5% (7/457), 31-40y = 1.7% (3/181), >40y = 4.6% (17/368). Prevalence of mesothelioma also shown for occupationally exposure by work locations with varied fiber concentrations. Comments: The study provides information on prevalent mesothelioma associated with high levels of environmental exposure in both men and women. There are important limitations most notably the lack of adjustment for confounders, and concerns about healthy worker effect bias in the occupationally exposed group.	Medium	2593920
Renal cell cancer Study Design: Case-Control	Occupational; PESS included in study; Female, Male; 489 cases diagnosed with renal cell cancer, 1989-90, New South Wales	Self-report interview Occupational Asbestos exposure as determined through in-person or telephone interviews; Asbestos - Not specified: 1332-21-4	Risk ratios for kidney cancer: 1.58 (1.02-2.44) (adjusted for age, sex, method of interview)Table 4: Occupational risk factors: 1.62 (1.04-2.53) (adjusted for age, sex, method of interview, cigarette smoking, body mass index)	Medium	630760

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Renal pelvic cancer Study Design: Case-Control	Occupational; PESS included in study; Female, Male; 147 individuals diagnosed with renal pelvic cancer 20-79, between 1989-90, New South Wales	Self-report interview Occupational Asbestos exposure as reported in interviews; Asbestos - Not specified: 1332-21-4	Risk ratios (95% CI): 1.24 (0.58-2.65) (adjusted for age, sex, method of interview, and education)	Medium	630760
Lung cancer Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.98 (95% CI: 1.53-2.57); Area B OR = 1.09 (95% CI: 0.78-1.51)	Uninformative	7836
Laryngeal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 0.48 (95% CI: 0.15-1.56); Area B OR = 1.16 (95% CI: 0.38-3.55) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.36 (95% CI: 0.86-2.16); Area B OR = 0.99 (95% CI: 0.56-1.75) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Colorectal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.18 (95% CI: 0.73-1.91); Area B OR = 0.85 (95% CI: 0.42-1.73) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Mesothelioma mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 17.4 mpcf (area A) and 16.3 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 2.55 (95% CI: 1.52-4.27); Area B OR = 1.11 (95% CI: 0.47-2.62)	Uninformative	7836

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos- Libby amphibole: 1318-09-8	No statistically significant associations were observed.	Medium	29964
Respiratory cancer mortality assessed by nosologist using ICD-8 (McDonald et al. 1986) and ICD-9 coding (HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (McDonald et al. 1986, HERO ID: 29964, McDonald and Armstrong 2003, HERO ID: 709547), USA, 406 workers (all male).	PCM Air (personal level), Air (area level) Fiber concentrations averaged 22 fibers/cc from 1970-1974, and were estimated to be on average 101.5 fibers/ml before 1965. By 1980, average exposures were <1 fibers/mL. Tremolite and Libby amphibole.; Asbestos - Tremolite: 14567-73-8- Asbestos- Libby amphibole: 1318-09-8	Analyses by McDonald and Armstrong 2003, HERO ID: 709547 found that exposure to 100 f/mL.y resulted in an increase of 36% mortality (RR=0.36, 95% CI=0.03 to 1.20).No statistically significant associations were observed (McDonald et al. 1986, HERO ID: 29964).	Medium	29964
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
Meningioma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; INTEROCC - seven country, 11 study center study (2000 - 2004); 1,906 cases; 5,565 controls	JEM Mean cumulative exposure for cases: 214.3 f/cm3; controls: 167.7 f/cm3;	Among women, there were significant trends for cumulative and duration of exposure to asbestos. Ever versus never exposed OR (95% CI): all = 1.11 (0.90, 1.37); men = 1.02 (0.80, 1.31); women = 1.50 (0.98, 2.28)		4165644

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm peritoneum mesothelioma (ICD 158)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm of the peritoneum (ICD 158) observed 9 deaths and expected 0.5. The statistically significant SMR ($p<0.01$) = 1985.3 (907.7, 3768.8). Latency of >= 40 years resulted in statistically significant ($p<0.01$) SMR of 3954 (1590,8148). Total latency also found statistically significant ($p<0.01$) SMR of 1985 (908, 3769).	Medium	3078781
Malignant neoplasm (ICD 140-208)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms (ICD 140-208) observed 195 deaths and expected 156.6. The statistically significant SMR ($p<0.01$) = 124.5 (107.6, 143.2).	Medium	3078781
Malignant neoplasm respiratory tract (160-165)	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	MN respiratory tract (160-165) observed 114 deaths and expected 61.6. The statistically significant SMR ($p<0.01$) = 184.6 (152.3, 221.8).		3078781

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms larynx (161) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms larynx (161) mortality observed 5 deaths and expected 5.2. The statistically significant SMR (p<0.01) = 96.8 (31.4,225.9).	Medium	3078781
Malignant neoplasms pleura (163) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms pleura (163) mortality observed 24 deaths and expected 0.9. The statistically significant SMR (p<0.01) = 2616.6 (1676.5, 3893.3).	Medium	3078781
Malignant neoplasms genitourinary (179-189) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms genitourinary (179-189) mortality observed 14 deaths and expected 20.9. The non- significant SMR= 67 (36.6, 112.3).	Medium	3078781

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms bladder (188) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms bladder (188) mortality observed 6 deaths and expected 9.3. The non-significant SMR= 64.4 (23.6, 140.1).	Medium	3078781
Malignant neoplasms nervous system (190-192) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms nervous system (190-192) mortality observed 3 deaths and expected 3.8. The non-significant SMR= 78.5 (16.2, 229.5).	Medium	3078781
Malignant neoplasms lynphohematopoietic system (200-208) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms lynphohematopoietic system (200-208) mortality observed 5 deaths and expected 10.6. The non-significant SMR= 47.3 (15.3, 110.3).	Medium	3078781

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm intestine and rectum (152-154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm intestine and rectum (152-154) mortality observed 14 deaths and expected 10.8. The non-significant SMR = 129.9 (71.0-218.0).	Medium	3078781
Malignant neoplasm rectum (154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm rectum (154) mortality observed 6 deaths and expected 3.8. The non-significant SMR = 157.1 (57.7-342.0).	Medium	3078781
Malignant neoplasm stomach (151) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm stomach (151) mortality observed 6 deaths and expected 11.3. The non-significant SMR = 52.9 (19.4-115.2).	Medium	3078781

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm digestive organs and peritoneum (150-159) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm digestive organs and peritoneum (150-159) mortality observed 48 deaths and expected 48.4. The non-significant SMR = 99.1(73.1-131.4).	Medium	3078781
Mesothelioma Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments. Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Mesothelioma Hazard Ratio (95% CI) for amphibole (yes/no): 6.98 (1.23, 39.47) Comments: Amphibole exposure in model was yes/no. Authors noted working at any time within the pipe factory was coded as amphibole exposure (yes) and that exposure here was mainly crocidolite; Results were statistically significant (two-sided $p < 0.05$);	Medium	2079066

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Austrian asbestos cement workers: 2,816 males asbestos cement workers; 49 lung cancer cases	PCM Air (personal level), Occupational Individual exposures were estimated (from 1973) from personal records on duration of exposure at different work places, estimations of dust concentration until 1965, dust measurements mainly by a conimeter method until 1975, and by personal air samplers and membrane filter methods (PCM) subsequently. Central tendencies not provided, but exposure is dichotomozed as above or below 25 fibres/mL-year.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4, Not specified: 1332-21-4	SMR for those <=25 fibres/ml-year compared to Austrian general population (smoking adjusted): 1.26 (95% CI: 0.83-1.95), ns; SMR for those >25 fibres/ml-year compared to Austrian general population (smoking adjusted): 0.96 (95% CI: 0.63-1.43), ns; Results without smoking adjustment were significant for both groups ($p<0.01$ and $p<0.05$, respectively).	Medium	3082545
Mesothelioma Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Austrian asbestos cement workers: 2,816 males asbestos cement workers; 4 mesothelioma cases, 16 nested controls	PCM Air (personal level), Occupational Individual exposures were estimated (from 1973) from personal records on duration of exposure at different work places, estimations of dust concentration until 1965, dust measurements mainly by a conimeter method until 1975, and by personal air samplers and membrane filter methods (PCM) subsequently. Central tendencies not provided, but exposure is dichotomozed as above or below 25 fibres/mL-year.; Asbestos - Crocidolite (riebeckite): 12001-28-4	All verified mesothelioma cases were found to have had medium to high exposure whereas controls had negligible to medium exposure (chi-square test=2.81, df=1, p=0.047)	Medium	3082545

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 108 (97-120); not significantFemales: SMR (90% CI)66 (40-104); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
gastrointestinal cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 93 (81-106); not significantFemales: SMR (90% CI)98 (74-102); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other cancers mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 92 (79-105); not significantFemales: SMR (90% CI)85 (70-100); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung and pleural cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 108 (97-120); not significantFemales: SMR (90% CI)66 (40-104); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
gastrointestinal cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 89 (70-109); not significantFemales: SMR (90% CI)123 (73-196); not significant Comments: Table 3	Low	3082792

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
other cancers mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 87 (66-108); not significantFemales: SMR (90% CI)119 (83-167); not significant Comments: Table 3	Low	3082792
Lung cancer	Occupational; PESS included in study; Male; 1,261 white males employed for at least one month between January 1, 1940, and December 31, 1965.	Air (area level) Asbestos fibres in various work areas. Classified as high (>5,000 fibres/cc) or low (<5,000 fibres/cc) days.; Asbestos - Not specified: 1332-21-4	SMRAge at first exposure:<20: 3.2820-24: 2.8025-29: 2.9930-34: 4.9735+: 2.66Time since first exposure:<15: 2.3415-19: 3.0620-24: 1.9125-29: 5.3630+: 3.77Cumulative exposure (in thousand fibre/cc days):<1: 1.341-9: 2.7110-39: 3.2140-99: 10.00100+: 15.39Adjusted rate ratios for high vs. low exposure for exposure windows20-24: 4.6 (CI: 1.3-16.3)	Medium	3082886
Mesothelioma assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.	Medium	163

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Pleural cancer mortality ascertained from death certificates and/or population registers and coded according to ICD-9	Adults or general, Occupational; PESS included in study; Male; Balangero chrysotile open-air mine worker cohort: (1945-2014), Italy, 1056 males were included in the most recent follow-up	PCM Air (area level), Air (outdoor), Occupational Mean concentrations varied by year and job category. "Mean concentrations in drilling were 37± 10 fibre/mL up to 1950 and 5± 1 fibre/mL in 1971"1976" (Pira et al. 2017, HERO ID 5060134). Majority chrysotile, occasional presence of crocidolite, 0.2% "0.5% balangeroite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	SMRs for pleural cancer mortality were 5.84 (95% CI 1.20 - 17.1%), 2.76 (95% CI 0.07 - 15.4), and 7.72 (95% CI 1.59-22.6) for <100, 100-400, and >400 cumulative fiber-years, respectively in the most recent follow-up (p for linear trend = 0.76) (Pira et al. 2017, HERO ID 5060134).	Medium	3082492
All study sites cancer (buccal cavity, pharynx, digestive system, stomach, colon, rectum gallbladder, pancreas, respiratory system, bladder, and kidney) measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mouth cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Buccal cavity and pharyngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Pharyngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Relative odds and lower 95% CI using continuous asbestos for cases vs. controls = 3.17(1.34), $p < 0.01$ (males only), for exposure based on residence and work histories, a 10 year latency period, and the amount of water intake. No significant associations for females or combined. Comments: Polissar et al. 1983a (HERO ID: 3083628); Table 7.	Medium	3083628
Digestive system cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Stomach cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Relative odds and lower 95% CI using continuous asbestos for cases vs. controls = 1.78 (1.04), $p < 0.05$ (males only), for exposure based on residence and work histories, a 10 year latency period, and the amount of water intake. No significant associations for females or combined. Comments: Polissar et al. 1983a (HERO ID: 3083628); Table 7.	Medium	3083628

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Colon cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Rectum cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Gallbladder cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Pancreatic cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Respiratory system cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Laryngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Lung cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Bladder cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Kidney cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Lung cancer cases. Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 7,887 males in Denmark, employed between 1928 and 1984.	Air (area level) Asbestos fibers:1948: 50-800 fibers/ml.1957: 10-100 fibers/ml.1973: 41% of exposure measurements >2.0 fibers/ml.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	SIR for the entire observation period: Lung cancer overall: 1.7 (95% CI: 1.5-2.0).Adenocarcinomas: 2.6 (95% CI: 1.9-3.4).Squamous cell carcinomas: 1.7 (95% CI: 1.4-2.2).Anaplastic carcinomas: 1.5 (95% CI: 1.1-2.0). Comments: In the results section, the authors explain that results will only be reported for men due to the low number of lung cancer cases found in women (3 cases).	Medium	3081452

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

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Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405

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Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

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Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

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Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
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Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
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Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405

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Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 70/20OR= 2.6 (95% CI: 1.4-4.9) Comments: Table 4. Information for <10um, log10 (f/g) of 5.5-6. Chrysotile exposure.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 17/1OR: 9.5 (95% CI: 1.3-194) Comments: Table 4. >/= 10um, log10 (f/g) 5.3-5.5. Chrysotile exposure.	Medium	3082405
Crocidolite concentrations measured by TEM Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Crocidolite >/=10um: b= 3.25 (SE=1.19), p-value=0.006 Comments: Information presented in Table 11.	Medium	3082405
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 55/9OR= 5.3 (95% CI: 2.3-12.3) Comments: Table 5. Information presented for amosite, log10 (f/g) of 5.5-6	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 7/2OR= 6.9 (95% CI: 1.9-30.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6.5-7. <10um length	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 12/1OR= 6.34 (95% CI: 1.39-40.1) Comments: Table 5. Information presented for amosite, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 31/2OR= 10.5 (95% CI: 2.4-64.8) Comments: Table 6. Information presented for crocidolite, log10 (f/g) of 5.5-6. >/=10um length.	Medium	3082405
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 30/3OR= 8.6 (95% CI: 2.2-40.0) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. <10um length.	Medium	3082405

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma cases compared with controls. Study Design: Case-Control	Adults or general; PESS may not included in study; Female, Male; 221 individuals with postmortem lung tissue samples in Australia, 21-90 years, 1980-85.	TEM Light microscopy Asbestos concentrations in lung tissue Asbestos fibers, mean not provided.; Asbestos - Crocidolite (riebeckite): 12001-28-4, Amosite (grunerite): 12172-73-5, Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4	Cases/Controls: 22/0OR= 22.68 (95% CI: 5.20-138.6) Comments: Table 8. Information presented for total amphibole, log10 (f/g) of 6-6.5. >/=10um length.	Medium	3082405
Lung cancer mortality assessed by ICD codes on death records (Ferrante et al., 2020, HEROID: 6861719). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (2020), Italy, 953 subjects (all male) (Ferrante et al., 2020, HEROID: 6861719).	PCM Air (personal level), Air (area level), Occupational Cumulative exposure concentrations were broken into tertiles (Q1: <27 f/mL-y; Q2: 27-345 f/mL/y; Q3: >=346 f/mL-y) (Ferrante et al., 2020, HEROID: 6861719). Only chrysotile reported.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed (Ferrante et al., 2020, HEROID: 6861719).	Medium	178
Mesothelioma incidence assessed with regional mesothelioma registry (Ferrante et al., 2020, HEROID: 6861719). Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos mine: (2020), Italy, 953 subjects (all male) (Ferrante et al., 2020, HEROID: 6861719).	PCM Air (personal level), Air (area level), Occupational Cumulative exposure concentrations were broken into tertiles (Q1: <27 f/mL-y; Q2: 27-345 f/mL/y; Q3: >=346 f/mL-y) (Ferrante et al., 2020, HEROID: 6861719). Only chrysotile reported.; Asbestos - Chrysotile (serpentine): 12001-29-5	Subjects in Q3 of exposure experience an increased risk of mesothelioma malignancy occurrence (RR, 95% CI=18.0,2.0-164.8) (Ferrante et al., 2020, HEROID: 6861719). Test for trend was significant, p=0.004. No significant findings for subjects in Q2 of exposure.	Medium	178

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 66 hospital patients with diagnosed mesothelioma and lung tissues samples, and 66 matched controls that were sourced from hospital patients treated by surgical lung resection for a cause different from mesothelioma as well as the general population from seven clinical centers in West Germany between January 1, 1988 and December 31, 1991.	TEM Biomonitoring Biomonitoring matrix: lung tissue; Asbestos exposure. Median concentrations of fibers longer than 5 μm for males with mesothelioma of 0.33 f/μg dry weight for amphibole fibers, 0.02 f/μg dry weight for chrysotile fibers; median concentrations of fibers longer than 5 μm for females with mesothelioma of 0.31 f/μg dry weight for amphibole fibers, below the detection limit for chrysotile fibers. Median concentrations of fibers longer than 5 μm for males without mesothelioma of 0.03 f/μg dry weight for amphibole fibers, below the detection limit for chrysotile fibers; median concentrations of fibers longer than 5 μm for females with mesothelioma of 0.04 f/μg dry weight for amphibole fibers, 0.02 f/μg dry weight for chrysotile fibers.; Asbestos - Chrysotile (serpentine): 12001-29-5, Not specified: 1332-21-4, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Mesothelioma diagnosis positively associated with increasing concentrations of total amphibole fibers longer than 5 μm in the lung: OR 4.5 (1.1-17.9) comparing the 0.1-<0.2 f/μg group to the reference group of <0.05 f/μg; OR 10.3 (2.6-40.2) comparing the 0.2-<0.5 f/μg group to the reference group of <0.05 f/μg; OR 98.7 (11.8-826) comparing the>=0.5 f/μg group to the reference group of <0.05 f/μg; no significant association was observed between the 0.05-<0.1 f/μg concentration of total amphibole fibers longer than 5 μm in the lung group and the reference group of <0.05 f/μg. Mesothelioma diagnosis was not significantly associated with increased concentrations of chrysotile fibers longer than 5 μm in the lung, both with and without adjustment for the concentration of amphibole fibers longer than 5 μm in the lung. Comments: OR estimates are very imprecise (with very large 95% confidence intervals) due to very small cells in the analysis, including some exposure/outcome groups with five or fewer participants in them.	Medium	3081025

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer	Occupational; PESS included in study; Male; Canadian petroleum workers cohort (1964-1994), United States, 17216 male workers.	Air (personal level) Asbestos, fibres/cc-years, low tertile: 0-0.014; medium tertile: 0.014"0.170; High tertile: >0.170.; Asbestos - Not specified: 1332-21-4	SIRs for asbestos level in tertiles were not statistically significant: SIR (<0"0.014 fibres/cc-years) = 0.40, 95% CI: 0.05 to 1.43. SIR (>0.014"0.170 fibres/cc-years) = 0.76, 95% CI: 0.25 to 1.78. SIR (>1.70 fibres/cc-years) = 1.53, 95% CI: 0.79 to 2.68.SIR for all asbestos exposed subjects was not statistically significant: SIR = 0.98, 95% CI: 0.59 to 1.53.In continuous exposure level analysis, Lung cancer relative risk exceeds 1 when exposure level about 17 fibres/cc-years, and all 95% CIs include null value. Comments: Table 2; 3rd paragraph in page 880 - description of Fig 1.	Medium	2558775
B-cell NHL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 1.2 (0.5-2.9, 95% CI)	Medium	3531424
HL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 1.4 (0.5-4.4, 95% CI)	Medium	3531424

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
T-NHL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 2.6 (0.3-21.7, 95% CI)	Medium	3531424
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma mortality	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Mesothelioma was reported to rise in the years of 5-24 years, 5-29 years, 5-34 years, but observed no mortality by mesothelioma in the final leg of follow-up to 40 years. Authors write that this is due to other causes of mortality before the 40-year follow-up.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 1.15 (95% CI 0.77"1.67). The age and smoking-adjusted HR for mortality was 1.06 (0.89"1.28) per 10-unit increase in fiber-years of exposure, and 0.91 (0.87"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Lung cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR calculated vs. the general Greek male population was 1.71 (95% CI 0.98"2.78). The age and smoking-adjusted HR for mortality was 1.08 (0.85"1.38) per 10-unit increase in fiber-years of exposure, and 0.89 (0.83"0.96) for each unit increase in years of exposure. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343
Mesothelioma cases	Occupational; PESS included in study; Female, Male; Lithuanian asbestos-cement workers, employed at least three months	Air (area level) Chrysotile asbestos fibers and dust; Asbestos - Chrysotile (serpentine): 12001-29-5	WomenSIR: 20.1 (2.9, 142.3) Comments: There was only one mesothelioma case in this cohort in a female participant	Low	3080235
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer determined using death certificates	Adults or general, Occupational; PESS included in study; Female, Male; Employees at or near a mine in Libby, Montana hired after 1959 (2014), United States, 880	PCM Air (area level), Occupational Median cumulative exposure of 3.4 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	Regression coefficient estimate for lung-cancer mortality = 5.8 per fiber/cc-year. Comments: Bateson et al. 2014 (HERO ID: 2238712), Table 2	Medium	709497
Lung cancer determined using death certificates	Adults or general, Occupational; PESS included in study; Female, Male; Employees at or near a mine in Libby, Montana hired after 1959 (2014), United States, 880	PCM Air (area level), Occupational Median cumulative exposure of 3.4 fibers/cc-years; fiber types included Libby amphibole, winchite, richterite, and tremolite; Asbestos- Libby amphibole: 1318-09-8-Asbestos-Richterite: 17068-76-7, Winchite: 12425-92-2, Tremolite: 14567-73-8	Regression coefficient estimate for lung-cancer mortality = 5.8 per fiber/cc-year. Comments: Bateson et al. 2014 (HERO ID: 2238712), Table 2	Medium	709497
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 70 (23-163) Comments: Information for males only. Table 6	Medium	3080436
Rectum and anal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 77 (9-278) Comments: Information for males only. Table 6	Medium	3080436
Gallbladder cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 523 (108-1528) Comments: Information for males only. Table 6	Medium	3080436
Pancreas cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): Males: 118 (24-345)Females: 376 (102-963) Comments: Information for males and females. Table 6 and 7	Medium	3080436

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Prostate cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 291 (126-573) Comments: Information for males only. Table 6	Medium	3080436
Bladder cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 85 (10-307) Comments: Information for males only. Table 6	Medium	3080436
Kidney cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 113 (14-408) Comments: Information for males only. Table 6	Medium	3080436
Brain cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 150 (18-542) Comments: Information for males only. Table 6	Medium	3080436
Lymphatic and haematopoietic tissue cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 222 (81-483) Comments: Information for males only. Table 6	Medium	3080436
Breast cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 103 (21-301) Comments: Information for females only. Table 7	Medium	3080436
Risk of mesothelioma Study Design: Case-Control	Adults or general, Occupational; PESS included in study; Female, Male; 51 case-control pairs of patients from Helsinki University Central Hospital	TEM SEM Biomonitoring Biomonitoring matrix: Lung; >1 million fibers/g dry lung tissue; Asbestos - Not specified: 1332-21-4	Elevated risk of mesothelioma associated with a lung fiber concentration of > 1 million fibers/g of dry tissue in men: OR = 14.4 (CI, 2.5 -178)	Medium	3082320

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Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
All cancer mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	All cancer mortality positively associated with the highest category of asbestos exposure. Adjusted HR (95% CI) = 2.04 (1.12, 3.71) for high exposure category. No significant associations for other exposure categories. P for trend = 0.009.		2638749

Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556
Digestive system cancer mortality as determined from death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 768 white males employed at an asbestos textile plant in the United States, 1940-75	PCM Air (personal level), Air (area level), Occupational Central tendencies for the overall sample are not presented, but are listed out split by job task in Appendix B; majority chrysotile; Asbestos - Chrysotile (serpentine): 12001-29-5	SMR for digestive system cancer mortality for cumulative dose groups:<10,000 f/cc days = 37, ns;10,000 - 40,000 f/cc days = 162, ns;40,000 - 100,000 f/cc days = 380, ns;100,000 - 200,000 f/cc days = - (no observed deaths);Total = 127, ns Comments: Table 6-1	Medium	6884448

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Digestive system cancer mortality assessed using ICD codes on death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; The cohort comprised 1,261 white males employed ≥1 month at a chrysotile asbestos textile factory in South Carolina between 1940 and 1965, with vital status ascertained through December 1975.	PCM Impinger dust converted to fiber estimates Air (area level) Mean chrysotile fiber > 5 μm concentrations for 1937-75 = 2.6 fibers/cc in general areas, 8.2 fibers/cc for raw fiber handling. Cumulative exposure was reported as fiber/cc-days (calendar days, not excluding weekends/holidays), divided here by 365 to approximate fiber/mL-years.; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant associations were observed.	Medium	67
Cancer of the digestive system and peritoneum mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 465 white male workers in Ohio, 1957-2010, 19.2-66.1 years in 1980	TEM polarized light microscopy, scanning electron microscopy Air (personal level), Air (area level) Cumulative fiber exposure, Mean (fiber-years/cm^ 3), 9.00; Asbestos- Libby amphibole: 1318-09-8, Not specified: 1332-21-4, Winchite: 12425-92-2-Asbestos- Richterite: 17068-76-7, Tremolite: 14567-73-8	No significant associations for cancer of the digestive system and peritoneum mortality with exposure among workers when compared with the US general population; SMR (95% CI) = 1.1 (0.6-1.9). No significant results for SRR or SMR analyses by tertiles. Comments: SMR were age and calendar year adjusted.	Low	1066036
Colorectal cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/ mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Esophagus cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Pleural and peritoneal mesothelioma assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No significant results were observed in Clin et al. 2011, HERO ID: 3078903.	High	3520580

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Colorectal cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Digestive cancer mortality among those with and without asbestosis Study Design: Cohort (Prospective)	Adults or general, Occupational; PESS included in study; Male; Male asbestos-cement workers from a factory in Canada who were hired prior to 1960, have worked for at least 9 years, and have had at least 12 months of asbestos exposure (n=151)	personal membrane filter Air (personal level), Occupational 20, 25, 30 year latency.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Digestive cancer SMR among workers without asbestosis (n=8) was significantly (according to author) elevated at 20 year latency (4.34, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was significantly (according to author) elevated at 20 year latency (2.76, CI unavailable, p-value unavailable).Digestive cancer SMR among workers without asbestosis (n=7) was elevated at 25 year latency (5.50, CI unavailable, p-value unavailable).Digestive cancer SMR among workers with asbestosis (n=1) was elevated at 25 year latency (5.32 CI unavailable, p-value unavailable). Significance unknownNo reported digestive cancer deaths among workers without asbestosis at 30-year latency.Digestive cancer SMR among workers with asbestosis (n=3) was elevated at 30 year latency (13.20, CI unavailable, p-value unavailable). Significance unknown Comments: Results were stratified among those with and without asbestosis. An exclusive association between exposure and asbestosis is not assessed.	Medium	3081283

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Gastrointestinal cancer mortality (ICD-8 150-159) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 131 (95% CI: 72-220)10-yr Latency (SMR): 145 (95% CI: 72-260) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Gastrointestinal disease mortality (ICD-8 520-577) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 151 (95% CI: 61-312)10-yr Latency (SMR): 112 (95% CI: 23-328) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Gastrointestinal tract tumors (ICD-7 150-158) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 127 (95% CI: 78-202)10-yr Latency (SMR): 133 (95% CI: 70-213) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Digestive cancer mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Stomach malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Oesophagus malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Colon and rectum malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Other digestive malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.36 (95% CI: 0.86-2.16); Area B OR = 0.99 (95% CI: 0.56-1.75) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
Colorectal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 10,918 male miners in Quebec (born 1890-1920), followed until 1992	Occupational Lung cancer referents Time-weighted average: 15.1 mpcf (area A) and 20.7 mpcf (area B); Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8	Conditional Logistic Regression: Area A OR = 1.18 (95% CI: 0.73-1.91); Area B OR = 0.85 (95% CI: 0.42-1.73) Comments: Exposure levels provided for lung cancer and mesothelioma referents only	Uninformative	7836
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
Digestive system disease (520-579) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Digestive system disease (520-579) mortality observed 34 deaths and expected 45.9. The non-significant SMR = 74.1 (51.3, 103.5).	Medium	3078781

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm intestine and rectum (152-154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm intestine and rectum (152-154) mortality observed 14 deaths and expected 10.8. The non-significant SMR = 129.9 (71.0-218.0).	Medium	3078781
Malignant neoplasm rectum (154) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm rectum (154) mortality observed 6 deaths and expected 3.8. The non-significant SMR = 157.1 (57.7-342.0).	Medium	3078781
Malignant neoplasm stomach (151) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm stomach (151) mortality observed 6 deaths and expected 11.3. The non-significant SMR = 52.9 (19.4-115.2).	Medium	3078781

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasm digestive organs and peritoneum (150-159) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasm digestive organs and peritoneum (150-159) mortality observed 48 deaths and expected 48.4. The non-significant SMR = 99.1(73.1-131.4).	Medium	3078781
gastrointestinal cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 following 10 years since first employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 93 (81-106); not significantFemales: SMR (90% CI)98 (74-102); not significant Comments: Table 1	Low	3082792

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
gastrointestinal cancer mortality	Adults or general, Occupational; PESS included in study; Female, Male; Males and females who worked in friction factory from 1941-1986 after 20 years from first employment with a minimum of 10 years of employment.	Air (area level), Occupational Authors do not provide clear exposure. This is provided from the text: "Briefly, before 1931 dust concentrations were high, reaching over 20 fibres/ml (f/ml), but they improved after the introduction of the Asbestos Regulations of 1931. From 1931 to 1950 high exposure, 5-20 f/ml, occurred only in the grinding and fibre preparation areas in the factory. After 1950 there was progressive control and throughout the factoryexposure was reduced to less than 5 f/ml; since 1970 levels above 0-5-1-0 f/ml have not been recorded."; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Males: SMR (90% CI) 89 (70-109); not significantFemales: SMR (90% CI)123 (73-196); not significant Comments: Table 3	Low	3082792
Digestive system cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Stomach cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Relative odds and lower 95% CI using continuous asbestos for cases vs. controls = 1.78 (1.04), $p < 0.05$ (males only), for exposure based on residence and work histories, a 10 year latency period, and the amount of water intake. No significant associations for females or combined. Comments: Polissar et al. 1983a (HERO ID: 3083628); Table 7.	Medium	3083628

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Colon cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Rectum cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Gallbladder cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Pancreatic cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Oesophageal cancer Study Design: Case-Control	Adults or general, Occupational; PESS may not included in study; Male; 185 Spanish-speaking men (cases) hospitalized between January 1995-March 1999 with oesophageal cancer, 30-80 years old.	Air (area level) Asbestos (fibres/cm^ 3); Asbestos - Not specified: 1332-21-4	Odds Ratios (95% CI)All oesophageal cancers:Low: 1.27 (0.77, 2.10)High: 3.46 (0.99, 12.10)Squamous cell carcinoma:Low: 1.38 (0.78, 2.46)High: 3.42 (0.76, 15.34)Adenocarcinoma:Low: 1.33 (0.53, 3.32)High: 3.99 (0.67, 23.77)	Uninformative	517889

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Lung cancer casesLaryngeal cancerLarge intestine cancer	Occupational; PESS included in study; Female, Male; 1,887 Lithuanian asbestos-cement workers employed for at least three months	Air (area level) Chrysotile fibers, 1.9-4.0 mg/m^ 3 for 1975-89, and was 1.2-2.2 mg/m^ 3 from 1990-1993; Asbestos - Chrysotile (serpentine): 12001-29-5	SIR, MenLung cancer: 0.9 (0.7-1.3)Laryngeal cancer: 1.4 (0.7-2.9)Large intestine: 1.6 (1.0-2.6)Duration of employmentLung cancer, shortest duration: 1.5 (0.7-2.6)	Medium	3080235
Stomach cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 70 (23-163) Comments: Information for males only. Table 6	Medium	3080436
Rectum and anal cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 77 (9-278) Comments: Information for males only. Table 6	Medium	3080436
Pancreas cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): Males: 118 (24-345)Females: 376 (102-963) Comments: Information for males and females. Table 6 and 7	Medium	3080436
Digestive system disease mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 192 (70-418) Comments: Information for males and females. Table 6 and 7	Medium	3080436
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846
Gastrointestinal mortality Study Design: Cohort (Prospective)	Occupational; PESS included in study; Male; 577 male asbestos textile factory workers in China, 1972-2008	TEM Occupational Asbestos (chrysotile); Asbestos - Chrysotile (serpentine): 12001-29-5	Gastrointestinal mortality not significantly associated with any category of asbestos exposure. P for trend = 0.807.	Medium	2638749

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Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
GI cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; A total of n=1,539 male mine workers, with n=1,080 mining ("miner and miller group" composed of those directly engaged in asbestos mining and milling, mechanical maintenance and transportation) workers and n=459 controls (administrative management, office work, cooks) were included for study. Average age of the whole cohort was 36 years.	conversion from dust Air (personal level), Air (area level) Average 2006 fiber concentration in the mine reported as 29.0 f/mL (range: 2.9 to 63.8 f/mL).; Asbestos - Chrysotile (serpentine): 12001-29-5	GI cancer: total (n=1,539 from 1080 miners and 459 controls): SMR (95% CI) = 1.32 (1.01, 1.72); GI cancer, miners versus control: Adjusted HR (95% CI): 2.96 (1.39, 6.31) Comments: Tables 2-3	Medium	2572504

Epidemiology Extraction Table: Other (please specify below)

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556
All other causes and asbestosis Study Design: Case-Control	Occupational; PESS included in study; Male; Males previously employed at the Wittenoom Gorge from 1943-1966, who completed radiographs at the Perth Chest Clinic after starting work at the gorge.	provides concentrations of airborne respirable fibres greater than 5u from 1966. Tool of measurement not stated Air (area level), Air (indoor) Cumulative exposure (f/mL-years), or by radiographic results (abnormal); Asbestos - Crocidolite (riebeckite): 12001-28-4	All other causes: Significantly increased risk for all other causes of death found by profusion and pleural thickening.Asbestosis: Significantly increased relative risk was found for asbestosis causing death and exposure by profusion 1.6 (1.1, 2.3 p-value 0.02) and by log cumulative exposure 4.0 (1.8, 8.8 p-value <0.001)	Low	3081932

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Epidemiology Extraction Table: Other (please specify below)

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Ear/nose/throat (ENT) cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Other (please specify below)

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Mesothelioma: incidence and mortalityMortality: all-cause, lung cancer, other cause-specificCancer incidence: all neoplasms, lung/respiratory cancers, other cause-specific Study Design: Cohort (Prospective), Case-Control (Nested)	Adults or general, Children (2-18y); PESS included in study; Female, Male; These studies analyzed a cohort of nearly 5,000 individuals who had lived in Wittenoom, Australia for ≥1 month from 1943-1993. Asbestos workers were excluded. Cohort size varied slightly with updates over time, including 4,768 participants (2608 women, 2160 men) at the end of 2000, and about 2,560 individuals exposed as children <15y in 2007 (Reid et al. 2008, 709466; Reid et al 2007, 709501; Reid et al 2012, 2088306).	TEM, PCM SEM, extrapolation based on dust exposure history Air (personal level), Air (area level) In the most recent study geometric mean (IQR) for estimated cumulative exposure was 3.02 (1.4-7.70) f/mL-years in persons who had been exposed as children, and 2.05 (0.90-5.75) f/mL-years in persons exposed only as adults (Reid et al. 2018, 6869529).; Asbestos - Crocidolite (riebeckite): 12001-28-4	For mesothelioma, the HR (95%) CI per 10 f/mL-years increase in exposure was 3.10 (2.11 to 4.53) in the most recent paper (Reid et al. 2018, 6869529). Hazard ratios for lung cancer reported in several papers were not significant. SMRs and/or SIRs were significant for mesothelioma, as well as a few additional outcomes, including "signs/symptoms ill-defined" mortality among women exposed in childhood, leukemia incidence and nervous system mortality in men exposed as children, and pneumoconiosis mortality in women (based on n=2 cases). Comments: This large cohort of residentially but not occupationally exposed individuals included 119 cases of mesothelioma by 2014. Analyses examined gender and age at exposure differences. There are concerns regarding exposure measurement error, particularly prior to 1966 when mining ceased: a single value based on expert judgment was extrapolated backward for the entire duration as no fiber measures had been taken. Exposure measurement error may be differential for mesothelioma cases who had detailed residential and work histories, while duration of residence was estimated from limited public records for half of the remaining cohort. There was about 20% loss to follow-up. Several SMRs/SIRs reached significance using a censoring method that might over-estimate associations, but not the alternative approach.	Medium	709618
Residual cancer (includes buccal cavity, larynx, prostate, and pharynx) mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	Plant 2 employees SMRs by cumulative asbestos exposure category:<6 mppcf-years = 1.06;6-24 mppcf-years = 1.15;25-49 mppcf-years = 1.71;50-99 mppcf-years = 2.31, $p < 0.05$;>=100 mppcf-years = 0.86. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Other (please specify below)

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
All cause, non-malignant respiratory disease, and circulatory disease mortality determined by ICD8 code.	Adults or general, Occupational; PESS included in study; Male; 194 male workers in Enoree vermiculite mining industry, South Carolina, 1985-1986,	PCM ATEM Air (area level), Air (indoor), Occupational Asbestos fiber exposure at end of service, Geometric Mean: 0.75 f/ml y. Authors note presence of actinolite, tremolite, and anthophyllite fiber types in methods but only fibrous tremolite in abstract.; Asbestos - Tremolite: 14567-73-8, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Results presented in Table 6. There were NO statistically significant results. Comments: No additional comments	Medium	29998
Life expectancy Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Female, Male; 309 asbestos cement factory workers who were in 1989/1990 aged 57.0 years (+/- 9.5 years) in Vocklabruck, Upper Austria and were followed from 1974-2006.	PCM Occupational estimated cumulative exposure from occupational spot measurements and job category assignments Mean (IQR) estimated cumulative exposure was reported in Table 2 as 72.62 fiber years (fibers x years/ cm^ 3) (70.81).; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Hazard ratio (95% CI): 1.13 (1.01, 1.26) Comments: Fiber years (/IQR: 70 fibers x years/ cm") in model; results statistically significant (two-sided $p < 0.05$);	Medium	2079066
Cancer and non-cancer mortality outcomes assessed by National Health Central Register and factory personnel department	Adults or general, Occupational; PESS included in study; Male; Workers at an asbestos textile factory: (1980), England, 679 exposed referents (all male)	thermal precipitator Air (area level), Air (indoor) Fiber concentrations averaged 10 fiber/ml in 1951 and "remained high" until 1970. Crocidolite and chrysotile.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	Relative risk for lung cancer mortality in workers with 20 or more years after first exposure after 1950 was 4.9 (8 observed, 1.62 expected;95% CI=2.1-9.7, p-value=0.01).No statistically significant associations were observed for other outcomes.	Low	163
Mouth cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628

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Epidemiology Extraction Table: Other (please specify below)

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Buccal cavity and pharyngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Pharyngeal cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	Relative odds and lower 95% CI using continuous asbestos for cases vs. controls = 3.17(1.34), p <0.01 (males only), for exposure based on residence and work histories, a 10 year latency period, and the amount of water intake. No significant associations for females or combined. Comments: Polissar et al. 1983a (HERO ID: 3083628); Table 7.	Medium	3083628
All cause mortality, malignant neoplasms, respiratory, circulatory disease, all other causes Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cohort of 194 men, 51 deaths 15 years or more from 1st employment.	PCM Fibers measured by the membrane filter method, and analytical electron microscopy Air (indoor), Occupational Cumulative exposure (f/ml.y): <1, n=103; 1 - <10, n=83; >= 10, n=8.;	"Of the 8 deaths attributed to malignant neoplasms, 4 deaths were attributed to respiratory cancer, 1 to abdominal, and 3 to other. ("3 respiratory cancer deaths occurred at cumulative exposure less than 1 f/ml.y. None occurred In the category of the highest cumulative exposures (>10 /ml.y)." 27 deaths were attributed to circulatory disease, 3 to respiratory, and 13 to all other causes.		3656846

Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Bladder and kidney cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Urinary tract disease mortality (ICD-8 520-577) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 291 (95% CI: 79-745)10-yr Latency (SMR): 389 (95% CI: 80-1140) Comments: Table 3. Central tendencies for asbestos not reported.	Medium	675185
Kidney or bladder malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281

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Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms genitourinary (179-189) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms genitourinary (179-189) mortality observed 14 deaths and expected 20.9. The non- significant SMR= 67 (36.6, 112.3).	Medium	3078781
Malignant neoplasms bladder (188) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms bladder (188) mortality observed 6 deaths and expected 9.3. The non-significant SMR= 64.4 (23.6, 140.1).	Medium	3078781
Genitourinary disease (580-629) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Genitourinary disease (580-629) mortality observed 6 deaths and expected 8.7. The non-significant SMR = 69.3 (25.4-150.8).	Medium	3078781

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Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Bladder cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628
Kidney cancer measured using ICD-O codes Study Design: Case-Control	Adults or general; PESS not included in study; Female, Male; Residents of Everett, Washington who use the Sultan River for drinking water (1983), United States, 382 cases and 462 controls (male and female)	TEM Drinking water Central tendencies not provided. 42.4% of cases and 45.9% of controls were exposed to 10-29 equivalent years of exposure (207 million fibers/liter per year).; Asbestos - Chrysotile (serpentine): 12001-29-5	No statistically significant results reported. Comments: Polissar et al. 1983a (HERO ID: 3083628)	Medium	3083628

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Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Cancer/Carcinogenesis-All cancer, lung cancer, larynx buccal and pharynx cancer, esophagus cancer, stomach cancer, colon-rectum cancer, kidney cancer, bladder cancer, pancreas cancer, other and unspecified cancer mortality-Mortality-Cardiovascular diseases mortality-Mortality-Bladder cancer mortality-Mortality-Kidney cancer mortality-Renal/Kidney-bladder cancer mortality-Mortality-Pancreas cancer mortality-Mortality-Colon-rectum cancer mortality-Mortality-Stomach cancer mortality-Mortality-Esophagus cancer mortality-Gastrointestinal-Pancreas cancer mortality-Gastrointestinal-Colon-rectum cancer mortality-Lung/Respiratory-Lung cancer mortality-Gastrointestinal-Stomach cancer mortality-Gastrointestinal-Esophagus cancer mortality-Renal/Kidney-Kidney cancer mortality-Cardiovascular-Cardiovascular diseases mortality-Mortality-Lung cancer mortality-Lung/Respiratory-Non-infectious pulmonary diseases mortality-Mortality-Non-infectious pulmonary diseases mortality-Lung/Respiratory-Asbestosis mortality-Mortality-Asbestosis mortality-Lung Cancer-Laryngeal Cancer-Other Cancer(s) (GI cancers, Renal/kidney cancers,)-Asbestosis-Other Non-Cancer Outcomes (non-infectious pulmonary diseases)	Adults or general, Occupational; PESS included in study; Male; White males from New Jersey who worked in the Paterson Factory compared to non-Paterson worker white males from New Jersey	"dust counts were made in more recent years in another plant of the same company. This facility made the same product as the Paterson factory, using the same fibers and the same production processes. Even though dust extraction equipment was likely to have been better in the later period of time, in samples taken as recently as October 197 I, (this factory closed in 1972) the counts of 5p + fibers averaged as high as 23 fibers/ml". Occupational Exposure to asbestos in Paterson Factory. Exposure ranges in elapsed number of years since onset of work as 5-9 years, 5-14 years, 5-19 years, 5-24 years, 5-29 years, 5-34 years, and 5-39 years.; Asbestos - Amosite (grunerite): 12172-73-5	Colon-rectum cancer mortality and other and unspecified cancer mortality reported a significant SMRs at $p<0.05$ from 5-40 elapsed years. Cancer in all sites and lung cancer mortality reported significant SMRs at $p<0.001$ from 5-40 elapsed years. All other outcomes reported non-significant elevated SMRs.	Medium	290

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Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Kidney cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 113 (14-408) Comments: Information for males only. Table 6	Medium	3080436

Epidemiology Extraction Table: Immune/Hematological

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Serum IgG levels (g/L) Study Design: Cross-Sectional	Occupational; PESS may not included in study; ; 52 workers from an asbestos factory	Native microscopic slides Biomonitoring Biomonitoring matrix: Sputum; Asbestos bodies were categorized into three groups: 1-5 asbestos bodies; 6 - 10 asbestos bodies; and over 10 asbestos bodies; Asbestos - Not specified: 1332-21-4	Chi-squared test resulted in no statistically significant difference between workers with an increased IgG level and those with normal or decreased IgG level in serum, in respect to the number of asbestos bodies Comments: Table 4	Uninformative	3082920
Lymphatic malignancies mortality measured using death certificates Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at two asbestos cement plants (1987), United States, 6,931 (all male)	PCM Air (area level), Occupational Plant 1 mean average concentration = 7.8 mppcf; Plant 2 mean average concentration = 7.5 mppcf. Conversion factor: 1.4 f/ml = 1 mppcf. Chrysotile, amosite, and crocidoloite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant results. Comments: Tables 8 and 9	Medium	281
Rheumatoid arthritis Study Design: Case-Control	Occupational; PESS included in study; Female, Male; Swedish participants (total n=126,534; cases n=11,285; controls n=115,249) obtained from a national rheumatoid arthritis study and national registries 1996-2003 with exposures estimated within a job exposure matrix utilizing occupational data from 1960-1990.	Job exposure matrix Median estimated asbestos exposure (Table 2) was noted as 0.10 fiber/cm3 for men, and 0.02 fiber/cm3 for women.; Asbestos - Not specified: 1332-21-4	Results indicated that male workers exposed to asbestos had higher risk of seropositive RA (OR=1.2, 95% CI: 1.0-1.4) compared with unexposed workers (Table 2). The risk of seropositive RA was highest (OR=1.3, 95% CI: 1.1-1.6) among workers exposed to asbestos from 1970, before the national ban was introduced (Table 3). Men who had been exposed to asbestos in all five censuses had an adjusted OR of 1.4 (95% CI: 1.0-1.8) for overall RA compared with unexposed workers (p trend=0.0016), and an adjusted OR of 1.4 (95% CI: 0.9-2.0) for seropositive RA (p trend=00075) (Table 4). High risks of seropositive RA were noted among smoking asbestos workers, with a reported adjusted OR of 3.8 (95% CI: 2.4-6.1) for smokers and an adjusted OR of 3.3 (95% CI: 2.4-4.4) for non-smokers, regardless of whether these workers had been exposed to asbestos or not (Table 5).	Medium	6869216

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Epidemiology Extraction Table: Immune/Hematological

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Malignant neoplasms lynphohematopoietic system (200-208) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms lynphohematopoietic system (200-208) mortality observed 5 deaths and expected 10.6. The non-significant SMR= 47.3 (15.3, 110.3).	Medium	3078781
T-NHL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 2.6 (0.3-21.7, 95% CI)	Medium	3531424
HL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 1.4 (0.5-4.4, 95% CI)	Medium	3531424

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Epidemiology Extraction Table: Immune/Hematological

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
B-NHL Study Design: Case-Control	Adults or general; PESS included in study; Female, Male; German and Italian adults (18-80 years of age). " identifed and approached in hospitals (Italy and Germany) and oYce-based (ambulatory) physicians (Germany). Patients as well as control subjects were required to be resident in the respective study area and to be familiar with the language (Germany)"	Professional judgement The authors do not report measurements of asbestos being taken for the study: "Trained industrial hygienists and occupational physiciansassessed intensity and frequency of exposure to asbestos in all study subjects, blind to their case"control status."; Asbestos - Not specified: 1332-21-4	Table 3, highest OR for both populations: 1.2 (0.5-2.9, 95% CI)	Medium	3531424

Epidemiology Extraction Table: Hepatic/Liver

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556
Liver and bile duct tumors (ICD-7 155) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 189 (95% CI: 23-684)10-yr Latency (SMR): 244 (95% CI: 30-880) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Cirrhosis mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; Cement workers in Greece exposed to low-level chrysotile asbestos, followed for up to 39 years	PCM Air (area level) Chrysotile asbestos with low amphibole contamination. Monitoring data was used to calculate cumulative years and fiber-years of exposure.; Asbestos - Chrysotile (serpentine): 12001-29-5	The SMR for cirrhosis calculated vs. the general Greek male population was 0.05 (95% CI 0.01"0.29). However, this analysis was based on n=1 cases. Comments: Results potentially susceptible to Healthy Worker Effect bias (general population SMR, no adjustment for employment duration or status)	Medium	3079343

Epidemiology Extraction Table: Reproductive/Developmental

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
The study analyzed incidence of any cancer and 35 other system- and site-specific cancer outcomes, excluding skin and bone cancers. Outcomes included incidence of digestive (e.g., digestive tract, retroperitoneum), respiratory (e.g., lung, pleural), and reproductive (e.g., cervix, prostate) cancers. Study Design: Ecological	Adults or general; PESS not included in study; Female, Male; This ecological study analyzed cancer incidence among residents of the San Francisco metropolitan area in 1969-1974 (population > 3 million), classified in 410 census "super tract" groupings. The super tracts had differing concentrations of asbestos in residential drinking water.	TEM Drinking water The distribution of chrysotile fibers/liter of water across the 410 super tracts was: low (25,000 - 310,000 f/l) n=148 (36.1%); medium (319,349 - 3,700,000 f/l) n=122 (29.8%); and high (4,600,000 - 36,000,000 f/l) n=140 (34.1%).; Asbestos - Chrysotile (serpentine): 12001-29-5	Digestive cancers were most consistently significantly associated with higher concentrations of asbestos in residential drinking water; results for other cancers were more variable. Standardized incidence ratios (SIRs) for outcomes with significant exposure trends in bivariate analyses were shown for men and women after further stratifying by median area income or education. For example, among white men, SIRs for digestive tract cancers in the lowest income group were 1.003, 0.941 and 1.168 over increasing levels of drinking water asbestos, vs. 0.876, 0.959, and 1.022 in the highest income group. Among white women, these SIRs were 0.946, 0.925 and 1.073 vs. 0.913, 1.006 and 1.008, respectively. Comments: Results were presented only when statistically significant. As a result, different associations were presented for the relationship between drinking water asbestos and cancer incidence in analyses using chi-square trend tests, regression models and correlations, as results across these methods were not consistent. Results of these analyses may have been affected by use of methods that were not optimal for the distributions of exposure and/or outcome variables (e.g., use of Pearson correlations with a highly non-normal exposure variable).	Medium	60556
Prostate cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; Workers at Calvados-area asbestos factories: (2011), France, 1604 workers (male) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580

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Epidemiology Extraction Table: Reproductive/Developmental

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Esophagus cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female; Workers at Calvados-area asbestos factories: (2011), France, 420 workers (female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580
Prostate tumors (ICD-7 177) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 170 (95% CI: 85-304)10-yr Latency (SMR): 191 (95% CI: 91-351) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
stillbirth Study Design: Case-Control	Infants (birth to 2y); PESS included in study; Female, Male; 40 stillborn infants in South Texas and 45 healthy live born infants, 1990-1992, at autopsy and birth	TEM Biomonitoring Biomonitoring matrix: Cases: liver, lung, placenta, and skeletal muscle tissues; Controls: placenta; Asbestos, Cases: Mean (f/g) 208047; Controls: Mean (f/g) 0; Asbestos - Chrysotile (serpentine): 12001-29-5, Tremolite: 14567-73-8, Crocidolite (riebeckite): 12001-28-4, Actinolite: 12172-67-7, Anthophyllite: 17068-78-9	Mean fiber levels significantly increased in stillborn infants compared to healthy infants. Mean (cases; controls) = (208,047; 0) p-value < .001	Medium	709626
Prostate cancer mortality Study Design: Cohort (Retrospective)	Occupational; PESS included in study; Male; 1,397 individuals diagnosed with asbestosis between 1970-1997.	Air (personal level) Asbestos fibers, range (f-y/ml) from less than or equal 25 to greater than or equal 106.; Asbestos - Not specified: 1332-21-4	SMR (95% CI): 291 (126-573) Comments: Information for males only. Table 6	Medium	3080436

Epidemiology Extraction Table: Neurological/Behavioral

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Locus of control determined from results of the Rotter locus of control questionnaire.	Adults or general, Occupational; PESS included in study; Female, Male; Former asbestos mine workers and former residents of Wittenoom who participated in a vitamin A program starting in 1990: Wittenoom, Western Australia. About 3000 participated in the Vitamin A program (Alfonso et al., 2005 2079051), 1392 had at least one spirometric test completed, 573 were residents and 819 were former workers (Alfonso et al., 2004 733567).	Air (area level), Occupational Intensity of exposure for subjects that didn"t work directly asbestos was 1 fiber/ml from 1943 to 1957, 0.5 f/ml between 1958 and 1966, and 0.01 f/ml in 1992. Individual cumulative exposure was calculated using intensity of exposure and duration of residence in Wittenoom. Majority crocidolite (Alfonso et al., 2004 733567, Alfonso et al., 2005 2079051).; Asbestos - Crocidolite (riebeckite): 12001-28-4	Increased cumulative asbestos exposure was associated with more external LOC (beta= 0.132 (95% CI: 0.004-0.038 p=0.018)(Franklin & Robinson 2015 3077939).	Medium	733567
Brain tumors (ICD-7 193.0) Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Male; 2,031 PVC processing plant employees (1961-1985)	Air (personal level), Occupational Tertile range (mean), 0.002 - 13.5 fiber-yr/mL; Asbestos - Chrysotile (serpentine): 12001-29-5	All subjects (SMR): 229 (95% CI: 84-498)10-yr Latency (SMR): 258 (95% CI: 70-660) Comments: Table 4. Central tendencies for asbestos not reported.	Medium	675185
Malignant neoplasms nervous system (190-192) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Malignant neoplasms nervous system (190-192) mortality observed 3 deaths and expected 3.8. The non-significant SMR= 78.5 (16.2, 229.5).	Medium	3078781

Epidemiology Extraction Table: Nutritional/Metabolic

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Diabetes (250) mortality	Adults or general, Occupational; PESS included in study; Male; Males who worked in the Bagnoli Eternit plant and were hired sometime between 1950-1986.	airborne asbestos fibre samplings and generic dust measures Air (personal level), Air (indoor) "Average total concentrations of asbestos fibers were in the range of 0.030 and 1.033 ff/cc, while crocidolite values ranged between 0.250 and 0.526 ff/cc".; Asbestos - Amosite (grunerite): 12172-73-5, Crocidolite (riebeckite): 12001-28-4, Chrysotile (serpentine): 12001-29-5	Diabetes (250) mortality observed 8 deaths and expected 17.6. The statistically significant SMR ($p<0.05$) = 45.4 (19.6, 89.5).	Medium	3078781

Epidemiology Extraction Table: Skin/Connective Tissue

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	HERO ID
Skin cancer assessed by histology from cancer registry. Study Design: Cohort (Retrospective)	Adults or general, Occupational; PESS included in study; Female, Male; Workers at Calvados-area asbestos factories: (2011), France, 2024 workers (male and female) (Clin et al. 2011, HERO ID: 3078903).	PCM Estimates prior to 1959 were extrapolations. Air (area level), Occupational Cumulative exposure index concentrations were categorized into tertiles of <40, >=40-<140, and >=140-853 fibers/mL*years. Average exposure levels were categorized into tertiles of <3, >=3-<9, and >=9-107 fibers/mL (Clin et al. 2011, HERO ID: 3078903). Fiber types are majority chrysotile, with some crocidolite.; Asbestos - Chrysotile (serpentine): 12001-29-5, Crocidolite (riebeckite): 12001-28-4	No statistically significant associations were observed.		3520580