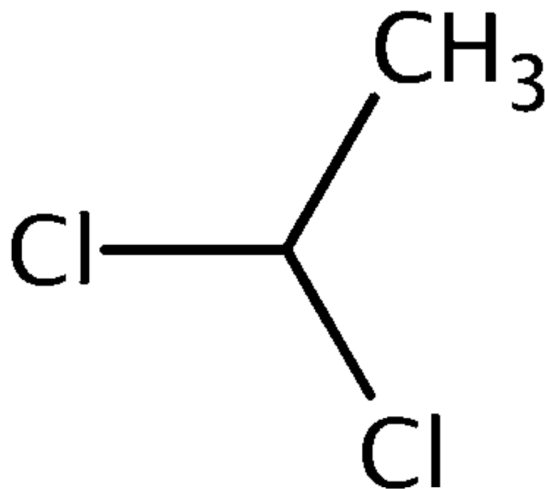


Risk Evaluation for 1,1-Dichloroethane

Systematic Review Supplemental File:

Data Extraction Information for
Environmental Hazard and Human Health Hazard Animal Toxicology and Epidemiology

CASRN: 75-34-3



June 2025

This supplemental file contains information regarding the data extraction results relevant to the [Risk Evaluation for 1,1-Dichloroethane](#). 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 the '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 [Risk Evaluation for 1,1-Dichloroethane – 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. Within the contents of this document, 1,1-dichloroethane may be referred to as the acronyms 1,1-DCA and 1,1-DCE. The acronyms 1,2-DCA, 1,2-DCE, and DCE refer to the chemical 1,2-dichloroethane. The acronyms 1,1,2-TCE, 1,1,2-TCA, and TCE refer to the chemical 1,1,2-trichloroethane. The acronym trans-1,2-DCE refers to the chemical trans-1,2-dichloroethylene. The acronym 1,2-DCP refers to the chemical 1,2-dichloropropane.

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. Due to data gaps for 1,1-dichloroethane, analog data for 1,2-dichloropropane and 1,1,2-trichloroethane were also extracted in the tables below. The study details and respective endpoints were organized by first the chemical (target chemical followed by analog chemical), then 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 ECOTOX; 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 will also be available in the [ECOTOXicology Knowledgebase \(ECOTOX\) database](#); moreover, additional data sources and experimental details for these studies will also be available in ECOTOX.

Data Extraction of Rodent Data for the Application of Environmental Hazard: For 1,1-dichloroethane, toxicity data gaps were identified for mammalian wildlife relevant to the terrestrial compartment of the environmental hazard assessment. This table includes rodent data for 1,1-dichloroethane, which were used as proxy for mammalian wildlife. The rodent data were evaluated following the human health hazard animal toxicity evaluation and extraction process; however, additional data for health outcomes most relevant for environmental hazard assessment were extracted and are listed here.

Human Health Hazard Animal Toxicity Extraction: All references that met PECO criteria and were categorized as 'human health relevant animal model' were extracted as detailed in Section 6.4 of the 2021 Draft Systematic Review Protocol. The data extraction results include data for 1,1-dichloroethane in addition to data for 1,2-dichloroethane, which was used as analog for read across in the [Risk Evaluation for 1,1-Dichloroethane](#). In addition to this data, a point of departure (POD) was reported. The POD extracted is the value reported by author reported when available. When the study author does not report a POD, EPA reviewers selected the lowest point of departure (POD). In addition to the target organ, any co-critical effects were reported along with OQD for the health outcome. In some cases, a POD could not be determined due to deficits in the reference, and the reviewer wrote 'Uninformative - not suitable for POD determination' in the POD field. A detailed summary statement of each study is reported along with the major limitations as identified by the reviewer and any guidelines used.

Epidemiological Study Information Extraction: All references that met PECO inclusion criteria and were categorized as 'human health epidemiology' were extracted as detailed in Section 6.4 of the 2021 Draft Systematic Review Protocol. The data extracted include data for 1,1-dichloroethane in addition to data for 1,2-dichloroethane, which was used as analog for read across in the [Risk Evaluation for 1,1-Dichloroethane](#). 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.

HERO ID	Reference	Page
Environmental Hazard		15
1,1-Dichloroethane		
Habitat: Terrestrial Taxa: Vascular plants		
	<i>Populus x canadensis</i> (Canadian Poplar)	
42313	Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (<i>Populus deltoides</i> x <i>nigra</i> DN34). <i>Environmental Toxicology and Chemistry</i> 20(2):389-393.	15
Habitat: Aquatic Taxa: Non-vascular plants		
	<i>Raphidocelis subcapitata</i> (Green Algae)	
4141189	Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to <i>Pseudokirchneriella subcapitata</i> . <i>Environmental Toxicology and Chemistry</i> 25(11):2920-2926.	16
11328283	Mitsubishi Chemical Medience Corporation, (2009). Algal growth inhibition test of <i>Pseudokirchneriella subcapitata</i> exposed to 1,1-dichloroethane (translation).	16
3617867	Tsai, K. P., Chen, C. Y. (2007). An algal toxicity database of organic toxicants derived by a closed-system technique. <i>Environmental Toxicology and Chemistry</i> 26(9):1931-1939.	18
Habitat: Aquatic Taxa: Fish		
	<i>Oncorhynchus mykiss</i> (Rainbow Trout)	
4840530	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (<i>Oncorhynchus mykiss</i>). <i>Environmental Toxicology and Chemistry</i> 14(12):2107-2113.	19
	<i>Oryzias latipes</i> (Japanese Medaka)	
11328276	Mitsubishi Chemical Medience Corporation, (2009). Acute toxicity test on killifish (<i>Oryzias latipes</i>) exposed to 1,1-dichloroethane (translation).	19
	<i>Poecilia reticulata</i> (Guppy)	
3684127	Könemann, H. (1981). Quantitative structure-activity relationships in fish toxicity studies. Part 1: Relationship for 50 industrial pollutants. <i>Toxicology</i> 19(3):209-221.	21
Habitat: Aquatic Taxa: Arthropods		
	<i>Chironomus riparius</i> (Midge)	
11589134	Smithers, (2024). Acute toxicity to midges (<i>Chironomus riparius</i>) under static-renewal conditions.	22
	<i>Daphnia magna</i> (Water Flea)	
11328278	Mitsubishi Chemical Medience Corporation, (2009). Reproduction test on <i>Daphnia magna</i> exposed to 1,1-dichloroethane (translation).	23

11328280	Mitsubishi Chemical Medience Corporation, (2009). Acute immobilization test on <i>Daphnia magna</i> exposed to 1,1-dichloroethane (translation).	27
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Analog Chemical Data

Habitat: Aquatic Taxa: Arthropods

Americamysis bahia (Opossum Shrimp)

5468652	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.	30
2803625	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.	31

Chironomus riparius (Midge)

10706027	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.	34
11424404	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.	101

Crangon crangon (Sand Shrimp)

5442093	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. <i>Water Research</i> 9(7):607-612.	102
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Daphnia magna (Water Flea)

5468652	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.	103
7508	Leblanc, G. A. (1980). Acute toxicity of priority pollutants to water flea (<i>Daphnia magna</i>). <i>Bulletin of Environmental Contamination and Toxicology</i> 24(5):684-691.	105

Habitat: Aquatic Taxa: Fish

Pimephales promelas (Fathead Minnow)

18052	Benoit, D. A., Puglisi, F. A., Olson, D. L. (1982). A fathead minnow <i>Pimephales promelas</i> early life stage toxicity test method evaluation and exposure to four organic chemicals. <i>Environmental Pollution Series A: Ecological and Biological</i> 28(3):189-197.	110
32169	Geiger, D. L., Northcott, C. E., Call, D. J., Brooke, L. T. (1985). Acute toxicities of organic chemicals to fathead minnows (<i>Pimephales promelas</i>): Volume II.	112
4259619	Walbridge, C. T., Fiandt, J. T., Phipps, G. L., Holcombe, G. W. (1983). Acute toxicity of ten chlorinated aliphatic hydrocarbons to the fathead minnow (<i>Pimephales promelas</i>). <i>Archives of Environmental Contamination and Toxicology</i> 12(6):661-666.	118

Habitat: Aquatic Taxa: Non-vascular plants

Chlamydomonas reinhardtii (Green Algae)

2797876	Schäfer, H., Hettler, H., Fritsche, U., Pitzén, G., Röderer, G., Wenzel, A. (1994). Biotests using unicellular algae and ciliates for predicting long-term effects of toxicants. <i>Ecotoxicology and Environmental Safety</i> 27(1):64-81.	123
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Selenastrum capricornutum (Green Algae)

5468652	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.	125
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Skeletonema costatum (Diatom)

10610562	Dow Chemical, (2010). [Redacted] Reanalysis of algal growth inhibition data from 1,2-dichloropropane report "1,2-Dichloropropane: The toxicity to <i>Skeletonema costatum</i> ".	125
5468652	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.	132
Habitat: Aquatic Taxa: Worms		
<i>Ophryotrocha labronica</i> (Polychaete)		
5442093	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.	133
Habitat: Terrestrial Taxa: Mammalian		
<i>Rattus norvegicus</i> (Norway Rat)		
5468652	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.	137
Data Extraction of Rodent Data for the Application of Environmental Hazard		138
200427	Klaunig, J. E., Ruch, R. J., Pereira, M. A. (1986). Carcinogenicity of chlorinated methane and ethane compounds administered in drinking water to mice. Environmental Health Perspectives 69:89-95.	138
644914	Muralidhara, S., Ramanathan, R., Mehta, S. M., Lash, L. H., Acosta, D., Bruckner, J. V. (2001). Acute, subacute, and subchronic oral toxicity studies of 1,1-dichloroethane in rats: Application to risk evaluation. Toxicological Sciences 64(1):135-145.	138
646679	NCI, (1978). Bioassay of 1,1-dichloroethane for possible carcinogenicity (CAS No. 75-34-3). National Cancer Institute Carcinogenesis Technical Report Series 66(1978):1-107.	139
Human Health Hazard Animal Toxicology		140
1,1-Dichloroethane		
Acute (less than or equal to 24 hr)		
1973137	Dow Chemical, (1947). Results of range-finding toxicological studies on Ethylidene Dichloride.	140
200479	Milman, H. A., Story, D. L., Riccio, E. S., Sivak, A., Tu, A. S., Williams, G. M., Tong, C., Tyson, C. A. (1988). Rat liver foci and in vitro assays to detect initiating and promoting effects of chlorinated ethanes and ethylenes. Annals of the New York Academy of Sciences 534:521-530.	140
644914	Muralidhara, S., Ramanathan, R., Mehta, S. M., Lash, L. H., Acosta, D., Bruckner, J. V. (2001). Acute, subacute, and subchronic oral toxicity studies of 1,1-dichloroethane in rats: Application to risk evaluation. Toxicological Sciences 64(1):135-145.	141
5441424	Natsyuk, M. V., Chekman, I. S. (1975). Content of nicotinamide coenzymes in liver and myocardium of rats poisoned with dichloroethane. Bulletin of Experimental Biology and Medicine 79(4):408-409.	141
5441056	Natsyuk, M. V., Fedurov, V. V. (1974). Effect of methyluracil on oxidative phosphorylation in the hepatic mitochondria of rats poisoned with dichloroethane. Bulletin of Experimental Biology and Medicine 77:391-393.	141
64411	Plaa, G. L., Larson, R. E. (1965). Relative nephrotoxic properties of chlorinated methane, ethane, and ethylene derivatives in mice. Toxicology and Applied Pharmacology 7(1):37-44.	142
5441619	Sergeev, S. N., Berezhnoi, R. V. (1977). Changes in distribution of carbonic-anhydrase activity in rat myocardium and liver during acute dichloroethane poisoning (histophotometric investigation). Bulletin of Experimental Biology and Medicine 83:108-110.	143

1048005	Zabrodskii, P. F., Troshkin, N. M., Mandych, V. G. (2004). Stimulation of immunotoxicity of chemicals metabolizing in vivo into highly toxic compounds by the monooxygenase system inducers. <i>Bulletin of Experimental Biology and Medicine</i> 138(4):369-371.	144
Short-term (>1-30 days)		
11728	Ghanayem, B. I., Maronpot, R. R., Matthews, H. B. (1986). Association of chemically induced forestomach cell proliferation and carcinogenesis. <i>Cancer Letters</i> 32(3):271-278.	146
644914	Muralidhara, S., Ramanathan, R., Mehta, S. M., Lash, L. H., Acosta, D., Bruckner, J. V. (2001). Acute, subacute, and subchronic oral toxicity studies of 1,1-dichloroethane in rats: Application to risk evaluation. <i>Toxicological Sciences</i> 64(1):135-145.	146
64411	Plaa, G. L., Larson, R. E. (1965). Relative nephrotoxic properties of chlorinated methane, ethane, and ethylene derivatives in mice. <i>Toxicology and Applied Pharmacology</i> 7(1):37-44.	147
62395	Schwetz, B. A., Leong, J., B.K., Gehring, P. J. (1974). Embryo- and fetotoxicity of inhaled carbon tetrachloride, 1,1-dichloroethane and methyl ethyl ketone in rats. <i>Toxicology and Applied Pharmacology</i> 28(3):452-464.	147
Subchronic (>30-91 days)		
200479	Milman, H. A., Story, D. L., Riccio, E. S., Sivak, A., Tu, A. S., Williams, G. M., Tong, C., Tyson, C. A. (1988). Rat liver foci and in vitro assays to detect initiating and promoting effects of chlorinated ethanes and ethylenes. <i>Annals of the New York Academy of Sciences</i> 534:521-530.	148
644914	Muralidhara, S., Ramanathan, R., Mehta, S. M., Lash, L. H., Acosta, D., Bruckner, J. V. (2001). Acute, subacute, and subchronic oral toxicity studies of 1,1-dichloroethane in rats: Application to risk evaluation. <i>Toxicological Sciences</i> 64(1):135-145.	148
646679	NCI, (1978). Bioassay of 1,1-dichloroethane for possible carcinogenicity (CAS No. 75-34-3). National Cancer Institute Carcinogenesis Technical Report Series 66(19):1-107.	149
Chronic (>91 days)		
1937626	Hofmann, H. T., Birnstiel, H., Jobst, P. (1971). On inhalation toxicity of 1,1- and 1,2-dichloroethane. <i>Archiv für Toxikologie</i> 27(3-4):248-265.	150
200427	Klaunig, J. E., Ruch, R. J., Pereira, M. A. (1986). Carcinogenicity of chlorinated methane and ethane compounds administered in drinking water to mice. <i>Environmental Health Perspectives</i> 69:89-95.	154
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	154
1973131	Mellon Institute, (1947). Repeated exposure of rats and dogs to vapors of eight chlorinated hydrocarbons.	155
646679	NCI, (1978). Bioassay of 1,1-dichloroethane for possible carcinogenicity (CAS No. 75-34-3). National Cancer Institute Carcinogenesis Technical Report Series 66(19):1-107.	157
Reproductive/Developmental		
62395	Schwetz, B. A., Leong, J., B.K., Gehring, P. J. (1974). Embryo- and fetotoxicity of inhaled carbon tetrachloride, 1,1-dichloroethane and methyl ethyl ketone in rats. <i>Toxicology and Applied Pharmacology</i> 28(3):452-464.	160
62623	Vozovaia, M. A. (1977). [The effect of dichloroethane on the sexual cycle and embryogenesis of experimental animals]. <i>Akusherstvo i Ginekologiya</i> 2(2):57-59.	160

Isomer: Dichloroethane

Acute (less than or equal to 24 hr)

1776866	Zabrodskii, P. F., Germanchuk, V. G., Kirichuk, V. F., Nodel', M. L., Aredakov, A. N. (2003). Anticholinesterase mechanism as a factor of immunotoxicity of various chemical compounds. Bulletin of Experimental Biology and Medicine 136(2):176-178.	161
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Isomer: 1,2-Dichloroethane

Acute (less than or equal to 24 hr)

194588	Alumot, E., Nachtomi, E., Mandel, E., Holstein, P. (1976). Tolerance and acceptable daily intake of chlorinated fumigants in the rat diet. Food and Cosmetics Toxicology 14(2):105-111.	162
200247	Brondeau, M. T., Bonnet, P., Guenier, J. P., De, C. J. (1983). Short-term inhalation test for evaluating industrial hepatotoxicants in rats. Toxicology Letters 19(1-2):139-146.	162
6569955	Co., S.C. (1973). Acute oral toxicity and eye and skin irritation properties of ethylene dichloride.	162
200279	Cottalasso, D., Domenicotti, C., Traverso, N., Pronzato, M., Nanni, G. (2002). Influence of chronic ethanol consumption on toxic effects of 1,2-dichloroethane: glycolipoprotein retention and impairment of dolichol concentration in rat liver microsomes and Golgi apparatus. Toxicology 178(3):229-240.	164
200280	Cottalasso, D., Fontana, L., Gazzo, P., Dapino, D., Domenicotti, C., Pronzato, M. A., Nanni, G. (1995). Effects of 1,2-dichloroethane intoxication on dolichol levels and glycosyltransferase activities in rat liver microsomes and Golgi apparatus. Toxicology 104(1-3):63-71.	165
194679	Crebelli, R., Carere, A., Leopardi, P., Conti, L., Fassio, F., Raiteri, F., Barone, D., Ciliutti, P., Cinelli, S., Vericat, J. A. (1999). Evaluation of 10 aliphatic halogenated hydrocarbons in the mouse bone marrow micronucleus test. Mutagenesis 14(2):207-215.	165
10699112	Dow Chemical, (2005). Ethylene dichloride: Acute vapor inhalation toxicity study in Fischer 344 rats.	167
10699356	Dow Chemical, (2017). [Redacted] 1,2-Dichloroethane: Acute vapor inhalation toxicity study in F344/DuCrI rats.	168
2799602	Dow Chemical, (1989). Comparison of the acute lethality of selected hydrocarbons via intratracheal and oral routes (final report) with attachments, cover sheets and letter dated 06/1989.	169
5447286	Dow Chemical, (1962). Topical application of various solvents and solutions to evaluate dermal irritation.	170
625286	Dow Chemical, (2006). 1,2-Dichloroethane (EDC): Limited pharmacokinetics and metabolism study in Fischer 344 rats.	170
6570013	Dow Chemical, (2006). Re: Testing consent order for ethylene dichloride; final report (docket no . OPPT-2003-0010).	172
725343	Dow Chemical, (1956). Results of skin absorption studies on carbon tetrachloride, ethylene dichloride, tetrachloroethylene, trichloroethylene, and chloroethene.	173
94473	Duuren, Van, B. L., Goldschmidt, B. M., Loewengart, G., Smith, A. C., Melchionne, S., Seidman, I., Roth, D. (1979). Carcinogenicity of halogenated olefinic and aliphatic hydrocarbons in mice. Journal of the National Cancer Institute 63(6):1433-1439.	173
60771	Francovitch, R. J., Schor, N. A., George, W. J. (1986). Effects of SKF 525A, phenobarbital, and 3-methylcholanthrene on ethylene dichloride toxicity following inhalation exposure. International Journal of Toxicology 5(2):117-126.	174
200352	Guo, X. L., Niu, Q. (2003). [The relationship between excitatory amino acids and acute intoxicated encephalopathy induced by 1,2-dichloroethane]. Zhonghua Laodong Weisheng Zhiyebing Zazhi / Chinese Journal of Industrial Hygiene and Occupational Diseases 21(2):83-85.	174
5447364	IRFMN, (1978). Clinical chemistry results in adult rats exposed to ethylene dichloride by inhalation for 12 months.	175
4528351	Kettering Laboratory, (1943). The physiological effects upon rabbits of exposure to 1,2-dichloroethane and 1,2-dibromoethane.	175
6118	Kitchin, K. T., Brown, J. L., Kulkarni, A. P. (1993). Predicting rodent carcinogenicity of halogenated hydrocarbons by in vivo biochemical parameters. Birth Defects Research, Part B: Developmental and Reproductive Toxicology 13(4):167-184.	176
58151	Kronevi, T., Wahlberg, J. E., Holmberg, B. (1981). Skin pathology following epicutaneous exposure to seven organic solvents. International Journal of Tissue Reactions 3(1):21-30.	177

5540663	Livesey, J. C. (1982). Studies on the metabolism and toxicity of 1,2-dihaloethanes.	178
4309	Mccarty, L. P., Flannagan, D. C., Randall, S. A., Johnson, K. A. (1992). Acute toxicity in rats of chlorinated hydrocarbons given via the intratracheal route. <i>Human & Experimental Toxicology</i> 11(3):173-177.	179
5447301	Mellon Institute, (1948). The toxicity of ethylene dichloride.	180
200479	Milman, H. A., Story, D. L., Riccio, E. S., Sivak, A., Tu, A. S., Williams, G. M., Tong, C., Tyson, C. A. (1988). Rat liver foci and in vitro assays to detect initiating and promoting effects of chlorinated ethanes and ethylenes. <i>Annals of the New York Academy of Sciences</i> 534:521-530.	186
18954	Moody, D. E., James, J. L., Clawson, G. A., Smuckler, E. A. (1981). Correlations among the changes in hepatic microsomal components after intoxication with alkyl halides and other hepatotoxins. <i>Molecular Pharmacology</i> 20(3):685-693.	186
4697223	Morel, G., Ban, M., Hettich, D., Huguet, N. (1999). Role of SAM-dependent thiol methylation in the renal toxicity of several solvents in mice. <i>Journal of Applied Toxicology</i> 19(1):47-54.	187
62637	Munson, A. E., Sanders, V. M., Douglas, K. A., Sain, L. E., Kauffmann, B. M., White Jr., K. L. (1982). In vivo assessment of immunotoxicity. <i>Environmental Health Perspectives</i> 43:41-52.	187
64411	Plaa, G. L., Larson, R. E. (1965). Relative nephrotoxic properties of chlorinated methane, ethane, and ethylene derivatives in mice. <i>Toxicology and Applied Pharmacology</i> 7(1):37-44.	188
4492125	Qin-li, Zhang, Qiao, Niu, Lai-yu, Li, Li-jun, Yang, Xiao-li, Guo, Jian-xun, Huang, Lin-ping, Wang, You-xin, Liang (2010). Toxic encephalopathy induced by occupational exposure to 1,2-dichloroethane and toxicological effect on animal model. :89-93.	188
200568	Salovsky, P., Shopova, V., Dancheva, V., Yordanov, Y., Marinov, E. (2002). Early pneumotoxic effects after oral administration of 1,2-dichloroethane. <i>Journal of Occupational and Environmental Medicine</i> 44(5):475-480.	190
200590	Sherwood, R. L., O'Shea, W., Thomas, P. T., Ratajczak, H. V., Aranyi, C., Graham, J. A. (1987). Effects of inhalation of ethylene dichloride on pulmonary defenses of mice and rats. <i>Toxicology and Applied Pharmacology</i> 91(3):491-496.	191
62617	Spencer, H. C., Rowe, V. K., Adams, E. M., McCollister, D. D., Irish, D. D. (1951). Vapor toxicity of ethylene dichloride determined by experiments on laboratory animals. <i>Archives of Industrial Hygiene and Occupational Medicine</i> 4(5):482-493.	192
200613	Storer, R. D., Conolly, R. B. (1985). An investigation of the role of microsomal oxidative metabolism in the in vivo genotoxicity of 1,2-dichloroethane. <i>Toxicology and Applied Pharmacology</i> 77(1):36-46.	193
5549990	Storer, R. D., Conolly, R. B. (1983). Comparative in vivo genotoxicity and acute hepatotoxicity of three 1,2-dihaloethanes. <i>Carcinogenesis</i> 4(11):1491-1494.	194
200614	Storer, R. D., Jackson, N. M., Conolly, R. B. (1984). In vivo genotoxicity and acute hepatotoxicity of 1,2-dichloroethane in mice: Comparison of oral, intraperitoneal, and inhalation routes of exposure. <i>Cancer Research</i> 44(10):4267-4271.	195
5554867	Umez, T., Shibata, Y. (2014). Different behavioral effect dose-response profiles in mice exposed to two-carbon chlorinated hydrocarbons: influence of structural and physical properties. <i>Toxicology and Applied Pharmacology</i> 279(2):103-112.	198
4453007	Wang, G., Yuan, Y., Zhang, J., Gao, L., Tan, X., Yang, G., Lv, X., Jin, Y. (2014). Roles of aquaporins and matrix metalloproteinases in mouse brain edema formation induced by subacute exposure to 1,2-dichloroethane. <i>Neurotoxicology and Teratology</i> 44:105-112.	199
734177	Zhang, Q., Niu, Q., Li, L. Y., Yang, L., Guo, X. L., Huang, J. X., Wang, L. P., Liang, Y. X. (2011). Establishment of a poisoned animal model of toxic encephalopathy induced by 1,2-dichloroethane. <i>International Journal of Immunopathology and Pharmacology</i> 24(1 Suppl):79S-83S.	200
4697102	Zhou, X., Cao, Y., Leuze, C., Nie, B., Shan, B., Zhou, W., Cipriano, P., Xiao, B. O. (2016). Early non-invasive detection of acute 1,2-dichloroethane-induced toxic encephalopathy in rats. <i>In Vivo</i> 30(6):787-793.	202
Short-term (>1-30 days)		
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62965	Daniel, F. B., Robinson, M., Olson, G. R., York, R. G., Condie, L. W. (1994). Ten and ninety-day toxicity studies of 1,2-dichloroethane in Sprague-Dawley rats. Drug and Chemical Toxicology 17(4):463-477.	207
10609985	Dow Chemical, (2014). [Redacted] Investigation of the mode of action for 1,2-dichloroethane-induced mammary tumors in female F344/DuCrI rats.	207
625286	Dow Chemical, (2006). 1,2-Dichloroethane (EDC): Limited pharmacokinetics and metabolism study in Fischer 344 rats.	208
1772372	Esch, van, G. J., Kroes, R., Logten, van, M. J., Tonkelaar, den, E. M. (1977). Ninety-day toxicity study with 1,2-dichloroethane (DCE) in rats.	210
7697651	Huang, M., Zhong, Y., Lin, L., Liang, B., Liu, J., Jiang, J., Hu, M., Huang, Y., Lin, X., Lu, L., Bian, Z., Zhong, W., Wu, J., Zheng, J., Rong, W., Zhang, Y., Jiang, L., Wu, J., Zhang, X., Yang, X., Hu, Q., Huang, Z. (2020). 1,2-Dichloroethane induces cerebellum granular cell apoptosis via mitochondrial pathway in vitro and in vivo. Toxicology Letters 322:87-97.	210
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200387	Igwe, O. J., Hee, Que, S. S., Wagner, W. D. (1986). Interaction between 1,2-dichloroethane and tetraethylthiuram disulfide (disulfiram). II. Hepatotoxic manifestations with possible mechanism of action. Toxicology and Applied Pharmacology 86(2):286-297.	212
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5431770	Jin, X., Wang, T., Liao, Y., Guo, J., Wang, G., Zhao, F., Jin, Y. (2019). Neuroinflammatory Reactions in the Brain of 1,2-DCE-Intoxicated Mice during Brain Edema.	213
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1522109	Wang, G., Qi, Y., Gao, L., Li, G., Lv, X., Jin, Y. P. (2013). Effects of subacute exposure to 1,2-dichloroethane on mouse behavior and the related mechanisms. Human & Experimental Toxicology 32(9):983-991.	220

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10190107	Zhong, Y., Liang, B., Meng, H., Ye, R., Li, Z., Du, J., Wang, B., Zhang, B., Huang, Y., Lin, X., Hu, M., Rong, W., Wu, Q., Yang, X., Huang, Z. (2022). 1,2-Dichloroethane induces cortex demyelination by depressing myelin basic protein via inhibiting aquaporin 4 in mice. <i>Ecotoxicology and Environmental Safety</i> 231:113180.	226
Subchronic (>30-91 days)		
194588	Alumot, E., Nachtomi, E., Mandel, E., Holstein, P. (1976). Tolerance and acceptable daily intake of chlorinated fumigants in the rat diet. <i>Food and Cosmetics Toxicology</i> 14(2):105-111.	231
62965	Daniel, F. B., Robinson, M., Olson, G. R., York, R. G., Condie, L. W. (1994). Ten and ninety-day toxicity studies of 1,2-dichloroethane in Sprague-Dawley rats. <i>Drug and Chemical Toxicology</i> 17(4):463-477.	231
1772372	Esch, van, G. J., Kroes, R., Logten, van, M. J., Tonkelaar, den, E. M. (1977). Ninety-day toxicity study with 1,2-dichloroethane (DCE) in rats.	231
1937626	Hofmann, H. T., Birnstiel, H., Jobst, P. (1971). On inhalation toxicity of 1,1- and 1,2-dichloroethane. <i>Archiv für Toxikologie</i> 27(3-4):248-265.	232
4528351	Kettering Laboratory, (1943). The physiological effects upon rabbits of exposure to 1,2-dichloroethane and 1,2-dibromoethane.	235
200479	Milman, H. A., Story, D. L., Riccio, E. S., Sivak, A., Tu, A. S., Williams, G. M., Tong, C., Tyson, C. A. (1988). Rat liver foci and in vitro assays to detect initiating and promoting effects of chlorinated ethanes and ethylenes. <i>Annals of the New York Academy of Sciences</i> 534:521-530.	236
62637	Munson, A. E., Sanders, V. M., Douglas, K. A., Sain, L. E., Kauffmann, B. M., White Jr., K. L. (1982). In vivo assessment of immunotoxicity. <i>Environmental Health Perspectives</i> 43:41-52.	236
5441108	NTP, (1978). Bioassay of 1,2-dichloroethane for possible carcinogenicity. <i>National Cancer Institute Carcinogenesis Technical Report Series</i> 55:1-103.	237
Chronic (>91 days)		
194588	Alumot, E., Nachtomi, E., Mandel, E., Holstein, P. (1976). Tolerance and acceptable daily intake of chlorinated fumigants in the rat diet. <i>Food and Cosmetics Toxicology</i> 14(2):105-111.	239
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94473	Duuren, Van, B. L., Goldschmidt, B. M., Loewengart, G., Smith, A. C., Melchionne, S., Seidman, I., Roth, D. (1979). Carcinogenicity of halogenated olefinic and aliphatic hydrocarbons in mice. <i>Journal of the National Cancer Institute</i> 63(6):1433-1439.	239

1937626	Hofmann, H. T., Birnstiel, H., Jobst, P. (1971). On inhalation toxicity of 1,1- and 1,2-dichloroethane. <i>Archiv für Toxikologie</i> 27(3-4):248-265.	240
5447260	IRFMN, (1987). Report on the clinical chemistry results after 18 months inhalatory exposure - ethylene dichloride.	244
5447359	IRFMN, (1976). Clinical chemistry results after 6 months inhalatory exposure to ethylene dichloride.	245
200427	Klaunig, J. E., Ruch, R. J., Pereira, M. A. (1986). Carcinogenicity of chlorinated methane and ethane compounds administered in drinking water to mice. <i>Environmental Health Perspectives</i> 69:89-95.	246
94773	Maltoni, C., Valgimigli, L., Scarnato, C. (1980). Long-term carcinogenic bioassays on ethylene dichloride administered by inhalation to rats and mice. <i>Banbury Report</i> 5:29-Mar.	246
1973131	Mellon Institute, (1947). Repeated exposure of rats and dogs to vapors of eight chlorinated hydrocarbons.	248
200497	Nagano, K., Umeda, Y., Senoh, H., Gotoh, K., Arito, H., Yamamoto, S., Matsushima, T. (2006). Carcinogenicity and chronic toxicity in rats and mice exposed by inhalation to 1,2-dichloroethane for two years. <i>Journal of Occupational Health</i> 48(6):424-436.	250
5441108	NTP, (1978). Bioassay of 1,2-dichloroethane for possible carcinogenicity. National Cancer Institute Carcinogenesis Technical Report Series 55:1-103.	252
62617	Spencer, H. C., Rowe, V. K., Adams, E. M., McCollister, D. D., Irish, D. D. (1951). Vapor toxicity of ethylene dichloride determined by experiments on laboratory animals. <i>Archives of Industrial Hygiene and Occupational Medicine</i> 4(5):482-493.	253
200612	Storer, R. D., Cartwright, M. E., Cook, W. O., Soper, K. A., Nichols, W. W. (1995). Short-term carcinogenesis bioassay of genotoxic procarcinogens in PIM transgenic mice. <i>Carcinogenesis</i> 16(2):285-293.	255
4451542	Suguro, M., Numano, T., Kawabe, M., Doi, Y., Imai, N., Mera, Y., Tamano, S. (2017). Lung tumor induction by 26-week dermal application of 1,2-dichloroethane in CB6F1-Tg rasH2 mice. <i>Toxicologic Pathology</i> 45(3):427-434.	257
Reproductive/Developmental		
194588	Alumot, E., Nachtomi, E., Mandel, E., Holstein, P. (1976). Tolerance and acceptable daily intake of chlorinated fumigants in the rat diet. <i>Food and Cosmetics Toxicology</i> 14(2):105-111.	260
5437237	Daigle, J., J.H., Cole, D. N., Carlson, J., Lee, W. R., Wilson, V. L. (2009). Ethylene Dichloride Disruption of Fertility in Male Mice. <i>The Open Toxicology Journal</i> 3:39-46.	261
62609	Lane, R. W., Riddle, B. L., Borzelleca, J. F. (1982). Effects of 1,2-dichloroethane and 1,1,1-trichloroethane in drinking water on reproduction and development in mice. <i>Toxicology and Applied Pharmacology</i> 63(3):409-421.	262
12099	Payan, J. P., Saillenfait, A. M., Bonnet, P., Fabry, J. P., Langonne, I., Sabate, J. P. (1995). Assessment of the developmental toxicity and placental transfer of 1,2-dichloroethane in rats. <i>Toxicological Sciences</i> 28(2):187-198.	262
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7310776	WIL Research, (2015). An extended one-generation drinking water reproductive toxicity study of ethylene dichloride in rats.	265
200708	Zhao, S. F., Bao, Y. S., Zhang, X. C. (1989). Studies on the effects of 1,2-dichloroethane on reproductive function. <i>Zhonghua Yufang Yixue Zazhi / Chinese Journal of Preventive Medicine</i> 23(4):199-202.	265

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1,1-Dichloroethane

Cancer/Carcinogenesis

3014082	Garcia, E., Hurley, S., Nelson, D. O., Hertz, A., Reynolds, P. (2015). Hazardous air pollutants and breast cancer risk in California teachers: A cohort study. <i>Environmental Health</i> 14(1):14.	271
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5440630	Niehoff, N. M., Gammon, M. D., Keil, A. P., Nichols, H. B., Engel, L. S., Sandler, D. P., White, A. J. (2019). Airborne mammary carcinogens and breast cancer risk in the Sister Study. <i>Environment International</i> 130:104897.	271
Gastrointestinal		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	272
Hepatic/Liver		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	273
Musculoskeletal		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	274
Neurological/Behavioral		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	275
Other		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	276
Reproductive/Developmental		
2799700	Brender, J. D., Shinde, M. U., Zhan, F. B., Gong, X., Langlois, P. H. (2014). Maternal residential proximity to chlorinated solvent emissions and birth defects in offspring: A case-control study. <i>Environmental Health</i> 13(1):96.	277
3014082	Garcia, E., Hurley, S., Nelson, D. O., Hertz, A., Reynolds, P. (2015). Hazardous air pollutants and breast cancer risk in California teachers: A cohort study. <i>Environmental Health</i> 14(1):14.	277

Isomer: 1,2-Dichloroethane

Cancer/Carcinogenesis		
32901	Austin, S. G., Schnatter, A. R. (1983). A case-control study of chemical exposures and brain tumors in petrochemical workers. <i>Journal of Occupational and Environmental Medicine</i> 25(4):313-320.	278
6570017	BASF. (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	278
200224	Benson, L. O., Teta, M. J. (1993). Mortality due to pancreatic and lymphopoietic cancers in chlorohydrin production workers. <i>British Journal of Industrial Medicine</i> 50(8):710-716.	278
5451581	Carbide,, Union (1989). Lymphatic and hematopoietic tissue cancer in a chemical manufacturing environment with attached tables and cover letter dated 022189.	280
4697224	Dosemeci, M., Cocco, P., Chow, W. H. (1999). Gender differences in risk of renal cell carcinoma and occupational exposures to chlorinated aliphatic hydrocarbons. <i>American Journal of Industrial Medicine</i> 36(1):54-59.	281
3014082	Garcia, E., Hurley, S., Nelson, D. O., Hertz, A., Reynolds, P. (2015). Hazardous air pollutants and breast cancer risk in California teachers: A cohort study. <i>Environmental Health</i> 14(1):14.	281
194820	Kernan, G. J., Ji, B. T., Dosemeci, M., Silverman, D. T., Balbus, J., Zahm, S. H. (1999). Occupational risk factors for pancreatic cancer: A case-control study based on death certificates from 24 U.S. states. <i>American Journal of Industrial Medicine</i> 36(2):260-270.	281

5440630	Niehoff, N. M., Gammon, M. D., Keil, A. P., Nichols, H. B., Engel, L. S., Sandler, D. P., White, A. J. (2019). Airborne mammary carcinogens and breast cancer risk in the Sister Study. <i>Environment International</i> 130:104897.	281
1357737	Sobel, W., Bond, G. G., Skowronski, B. J., Brownson, P. J., Cook, R. R. (1987). A soft tissue sarcoma case control study in a large multi-chemical manufacturing facility. <i>Chemosphere</i> 16(8-9):2095-2099.	281
Endocrine		
194820	Kernan, G. J., Ji, B. T., Dosemeci, M., Silverman, D. T., Balbus, J., Zahm, S. H. (1999). Occupational risk factors for pancreatic cancer: A case-control study based on death certificates from 24 U.S. states. <i>American Journal of Industrial Medicine</i> 36(2):260-270.	282
Gastrointestinal		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	283
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	283
Hepatic/Liver		
200266	Cheng, T. J., Huang, M. L., You, N. C., Du, C. L., Chau, T. T. (1999). Abnormal liver function in workers exposed to low levels of ethylene dichloride and vinyl chloride monomer. <i>Journal of Occupational and Environmental Medicine</i> 41(12):1128-1133.	284
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	284
Immune/Hematological		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	285
Lung/Respiratory		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	286
Mortality		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	287
200633	Teta, M. J., Ott, M. G., Schnatter, A. R. (1991). An update of mortality due to brain neoplasms and other causes among employees of a petrochemical facility. <i>Journal of Occupational Medicine</i> 33(1):45-51.	287
Musculoskeletal		
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. <i>Gigiena Truda i Professional'nye Zabolevaniya</i> 1:31-38.	288
Neurological/Behavioral		
32901	Austin, S. G., Schnatter, A. R. (1983). A case-control study of chemical exposures and brain tumors in petrochemical workers. <i>Journal of Occupational and Environmental Medicine</i> 25(4):313-320.	289
200241	Bowler, R. M., Gysens, S., Hartney, C. (2003). Neuropsychological effects of ethylene dichloride exposure. <i>NeuroToxicology</i> 24(4-5):553-562.	289

18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. Gigiena Truda i Professional'nye Zabolevaniya 1:31-38.	289
Other		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	290
1938385	Guo, P., Yokoyama, K., Piao, F., Sakai, K., Khalequzzaman, M., Kamijima, M., Nakajima, T., Kitamura, F. (2013). Sick building syndrome by indoor air pollution in Dalian, China. International Journal of Environmental Research and Public Health 10(4):1489-1504.	290
18135	Kozik, I. V. (1957). [Problems of occupational hygiene in the use of dichloroethane in the aviation industry]. Gigiena Truda i Professional'nye Zabolevaniya 1:31-38.	290
Renal/Kidney		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	291
4697224	Dosemeci, M., Cocco, P., Chow, W. H. (1999). Gender differences in risk of renal cell carcinoma and occupational exposures to chlorinated aliphatic hydrocarbons. American Journal of Industrial Medicine 36(1):54-59.	291
Reproductive/Developmental		
6570017	BASF, (2005). Letter: Subject: Supplemental information regarding prior TSCA Section 8(e) submission - Preliminary results from a cancer incidence study of employees assigned to a BASF Corporation former chemical manufacturing unit in Geismar, LA that ceased operations in 1987 (EPA Control number: 8EHQ-02-15135).	292
200239	Bove, F. J. (1996). Public drinking water contamination and birthweight, prematurity, fetal deaths, and birth defects. Toxicology and Industrial Health 12(2):255-266.	292
194932	Bove, F. J., Fulcomer, M. C., Klotz, J. B., Esmart, J., Dufficy, E. M., Savrin, J. E. (1995). Public drinking water contamination and birth outcomes. American Journal of Epidemiology 141(9):850-862.	292
2799700	Brender, J. D., Shinde, M. U., Zhan, F. B., Gong, X., Langlois, P. H. (2014). Maternal residential proximity to chlorinated solvent emissions and birth defects in offspring: A case-control study. Environmental Health 13(1):96.	293
3014082	Garcia, E., Hurley, S., Nelson, D. O., Hertz, A., Reynolds, P. (2015). Hazardous air pollutants and breast cancer risk in California teachers: A cohort study. Environmental Health 14(1):14.	293
Skin and Connective Tissue		
1357737	Sobel, W., Bond, G. G., Skowronski, B. J., Brownson, P. J., Cook, R. R. (1987). A soft tissue sarcoma case control study in a large multi-chemical manufacturing facility. Chemosphere 16(8-9):2095-2099.	294

Terrestrial: 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
75-34-3	2 Week(s), (2 Week(s))	<i>Populus x canadensis</i> (Canadian Poplar), Not reported, Not Reported, Laboratory (HRAMOR NURSERY, MANISTEE, MI)	Aqueous, Environmental, Hydroponic, Not Reported	Measured	0 mM / 2.2 mM / 3.8 mM / 5.3 mM / 8.4 mM	Growth (Growth-Weight, Response Site: Whole organism)	EC0 (1059 mg/L)	Development/Growth	Medium	42313
75-34-3	0-2 Week(s), (2 Week(s))	<i>Populus x canadensis</i> (Canadian Poplar), Not reported, Not Reported, Laboratory (HRAMOR NURSERY, MANISTEE, MI)	Aqueous, Environmental, Hydroponic, Not Reported	Measured	0 mM / 2.2 mM / 3.8 mM / 5.3 mM / 8.4 mM	Growth (Growth-Weight, Response Site: Whole organism)	NR (2.2-8.4 mM)	Development/Growth	Medium	42313
75-34-3	2 Week(s), (2 Week(s))	<i>Populus x canadensis</i> (Canadian Poplar), Not reported, Not Reported, Laboratory (HRAMOR NURSERY, MANISTEE, MI)	Aqueous, Environmental, Hydroponic, Not Reported	Measured	0 mM / 2.2 mM / 3.8 mM / 5.3 mM / 8.4 mM	Physiology (Physiology-Transpiration, Response Site: Not reported)	EC50 (802 mg/L)	Respiratory	Medium	42313

* 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: Non-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
75-34-3	48 Hour(s), (48 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Not reported, Not Reported, Laboratory (NR)	Culture, Aqueous (aquatic habitat), Static, Not Reported	Chemical analysis reported	NR / NR	Physiology (Physiology-Respiration, Response Site: Not reported)	EC50 (44.83 (43.31-46.25) mg/L)	Respiratory	Uninformative	4141189
75-34-3	48 Hour(s), (48 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Not reported, Not Reported, Laboratory (NR)	Culture, Aqueous (aquatic habitat), Static, Not Reported	Chemical analysis reported	NR / NR	Growth (Growth-Growth rate, Response Site: Not reported)	EC50 (47.40 (45.31-49.35) mg/L)	Development/Growth	Uninformative	4141189
75-34-3	72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (AMERICAN TYPE CULTURE COLLECTION, OBTAINED JUNE 20, 1996)	Culture, Aqueous (aquatic habitat), Static, Not reported	Measured	0 mg/L / 94.3 (72.0-184) mg/L	Growth (Development-Growth rate, Response Site: Not reported)	EC50 (>94.3 mg/L)	Development/Growth	High	11328283
75-34-3	0-72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (AMERICAN TYPE CULTURE COLLECTION, OBTAINED JUNE 20, 1996)	Culture, Aqueous (aquatic habitat), Static, Not reported	Measured	0 mg/L / 94.3 (72.0-184) mg/L	Population (Population-Biomass, Response Site: Not reported)	NR (94.3 (72.0-184) mg/L)	Development/Growth	High	11328283

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Aquatic: Non-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
75-34-3	72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (AMERICAN TYPE CULTURE COLLECTION, OBTAINED JUNE 20, 1996)	Culture, Aqueous (aquatic habitat), Static, Not reported	Measured	0 mg/L / 94.3 (72.0-184) mg/L	Cellular (Histology-Histological changes, general, Response Site: Cell)	NR (94.3 (72.0-184) mg/L)	Mechanistic: Cytotoxicity	High	11328283
75-34-3	72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (AMERICAN TYPE CULTURE COLLECTION, OBTAINED JUNE 20, 1996)	Culture, Aqueous (aquatic habitat), Static, Not reported	Measured	0 mg/L / 94.3 (72.0-184) mg/L	Growth (Development-Growth rate, Response Site: Not reported)	NOEC (94.3 mg/L)	Development/Growth	High	11328283
75-34-3	72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Not reported, Not Reported, Not reported	Not reported, Aqueous (aquatic habitat), Not reported, Not reported	Unmeasured values (some measured values reported in article)	0 mg/L / 0.289-0.521 mg/L / 10 mg/L / 37.4-52.1 mg/L	Growth (Development-Growth rate, Response Site: Not reported)	NR (0.289-52.1 mg/L)	Development/Growth	Medium	11328283
75-34-3	72 Hour(s), (72 Hour(s))	<i>Raphidocelis subcapitata</i> (Green Algae), Not reported, Not Reported, Not reported	Not reported, Aqueous (aquatic habitat), Not reported, Not reported	Measured	0 mg/L / 55.2-124 mg/L	Growth (Development-Growth rate, Response Site: Not reported)	NR (55.2-124 mg/L)	Development/Growth	Medium	11328283

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Aquatic: Non-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
75-34-3	48 Hour(s), (48 Hour(s))	<i>Raphidocelis sub-capitata</i> (Green Algae), Not reported, Not Reported, Laboratory (UNIVERSITY OF TEXAS AT AUSTIN, TX, USA)	Culture, Aqueous (aquatic habitat), Static, Not Reported	Chemical analysis reported	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (42.92 mg/L)	Development/Growth	Uninformative	3617867

* 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
75-34-3	1 Hour(s), (1 Hour(s))	<i>Oncorhynchus mykiss</i> (Rainbow Trout), Fingerling, Not Reported, Laboratory (LOCAL SOUTHERN ONTARIO FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Unmeasured	0 ug/L / 0 ug/L / 10 ug/L	Behavior (Behavior-Distance moved, change in direct movement, Response Site: Not reported)	NR (10 ug/L)	Behavioral	High	4840530
75-34-3	1 Hour(s), (1 Hour(s))	<i>Oncorhynchus mykiss</i> (Rainbow Trout), Fingerling, Not Reported, Laboratory (LOCAL SOUTHERN ONTARIO FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Unmeasured	0 ug/L / 0 ug/L / 10 ug/L	Physiology (Physiology-Cough, Response Site: Not reported)	NR (10 ug/L)	Respiratory	High	4840530
75-34-3	1 Hour(s), (1 Hour(s))	<i>Oncorhynchus mykiss</i> (Rainbow Trout), Fingerling, Not Reported, Laboratory (LOCAL SOUTHERN ONTARIO FISH HATCHERY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Unmeasured	0 ug/L / 0 ug/L / 10 ug/L	Physiology (Physiology-Ventilation, Response Site: Not reported)	NR (10 ug/L)	Respiratory	High	4840530
75-34-3	24 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), <=6 Months post-hatch, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>112 mg/L)	Mortality	High	11328276

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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
75-34-3	48 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), <=6 Months post-hatch, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>112 mg/L)	Mortality	High	11328276
75-34-3	72 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), <=6 Months post-hatch, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>112 mg/L)	Mortality	High	11328276
75-34-3	96 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), <=6 Months post-hatch, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC0 (112 mg/L)	Mortality	High	11328276
75-34-3	96 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), <=6 Months post-hatch, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>112 mg/L)	Mortality	High	11328276

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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
75-34-3	96 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), Not reported, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0 mg/L / 12.5 (11.6-13.3) mg/L / 20.1 (19.6-20.8) mg/L / 34.9 (33.9-36.8) mg/L / 65.5 (61.8-69.5) mg/L / 112 (109-115) mg/L	Behavior (Behavior-Swimming, Response Site: Not reported)	NR (0-112 mg/L)	Behavioral	High	11328276
75-34-3	96 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), Not reported, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	0.645 mg/L / 7.08 mg/L / 60.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (0.645-60.9 mg/L)	Mortality	High	11328276
75-34-3	96 Hour(s), (96 Hour(s))	<i>Oryzias latipes</i> (Japanese Medaka), Not reported, Not Reported, Laboratory (IN-HOUSE BREEDING)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	141 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (141 mg/L)	Mortality	High	11328276
75-34-3	7 Day(s), (7 Day(s))	<i>Poecilia reticulata</i> (Guppy), 2-3 Month(s), Not Reported, Laboratory (NR)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	(log)LC50 (3.31 umol/L)	Mortality	Uninformative	3684127

* 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: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	24 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.50000 mg/L / 20.725 (20-22) mg/L / 42.674 (40-45) mg/L / 94.627 (88-100) mg/L / 175.91 (160-190) mg/L / 375.63 (350-410) mg/L	Multiple (Multiple-Multiple effects reported as one result, Response Site: Not reported)	EC50 (>380 mg/L)	Mortality	High	11589134
75-34-3	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.50000 mg/L / 20.725 (20-22) mg/L / 42.674 (40-45) mg/L / 94.627 (88-100) mg/L / 175.91 (160-190) mg/L / 375.63 (350-410) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	NR (20-410 mg/L)	Immobilization	High	11589134
75-34-3	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.50000 mg/L / 20.725 (20-22) mg/L / 42.674 (40-45) mg/L / 94.627 (88-100) mg/L / 175.91 (160-190) mg/L / 375.63 (350-410) mg/L	Behavior (Behavior-Activity, general, Response Site: Not reported)	NR (20-410 mg/L)	Behavioral	High	11589134
75-34-3	48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.50000 mg/L / 20.725 (20-22) mg/L / 42.674 (40-45) mg/L / 94.627 (88-100) mg/L / 175.91 (160-190) mg/L / 375.63 (350-410) mg/L	Multiple (Multiple-Multiple effects reported as one result, Response Site: Not reported)	EC50 (150 (130-180) mg/L)	Mortality	High	11589134

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 mg/L / 10 mg/L / 30 mg/L / 100 mg/L / 300 mg/L / 1000 mg/L	Multiple (Multiple-Multiple effects reported as one result, Response Site: Not reported)	NR (10-1000 mg/L)	Mortality	High	11589134
75-34-3	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.50000 mg/L / 20.725 (20-22) mg/L / 42.674 (40-45) mg/L / 94.627 (88-100) mg/L / 175.91 (160-190) mg/L / 375.63 (350-410) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (20-410 mg/L)	Mortality	High	11589134
75-34-3	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>15.2 mg/L)	Mortality	High	11328278
75-34-3	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), F0 generation, Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Net Reproductive Rate, Response Site: Not reported)	LOEC (1.64 mg/L)	Reproductive/Teratogenic	High	11328278

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Net Reproductive Rate, Response Site: Not reported)	NOEC (0.525 mg/L)	Reproductive/Teratogenic	High	11328278
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), F0 generation, Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (0.118-21.2 mg/L)	Mortality	High	11328278
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Mortality (Mortality-Mortality/survival, general, Response Site: Not reported)	NR (0.165-15.2 mg/L)	Mortality	High	11328278

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Behavior (Behavior-Swimming, Response Site: Not reported)	NR (0.118-21.2 mg/L)	Behavioral	High	11328278
75-34-3	7-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Progeny counts/numbers, Response Site: Not reported)	NR (0.165-15.2 mg/L)	Reproductive/Teratogenic	High	11328278
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Physiology (Physiology-Pigmentation, Response Site: Not reported)	NR (0.118-21.2 mg/L)	Development/Growth	High	11328278

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Growth (Growth-Size, Response Site: Whole organism)	NR (0.165-15.2 mg/L)	Development/Growth	High	11328278
75-34-3	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), F0 generation, Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Net Reproductive Rate, Response Site: Not reported)	EC50 (6.67 (5.43-8.41) mg/L)	Reproductive/Teratogenic	High	11328278
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), F0 generation, Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Time to first progeny, Response Site: Not reported)	NR (0.118-21.2 mg/L)	Reproductive/Teratogenic	High	11328278

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	1-21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.005 mg/L / 0.165 (0.118-0.231) mg/L / 0.525 (0.389-0.739) mg/L / 1.64 (1.35-2.29) mg/L / 5.25 (4.23-7.00) mg/L / 15.2 (11.7-18.7) mg/L	Reproduction (Reproduction-Abnormal, Response Site: Whole organism)	NR (0.165-15.2 mg/L)	Reproductive/Teratogenic	High	11328278
75-34-3	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.1 mg/L / 6.98 (6.3-8.03) mg/L / 12.2 (10.8-14.1) mg/L / 22.8 (19.9-26.5) mg/L / 37.4 (33.4-41.4) mg/L / 60 (56.2-65.1) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC50 (47.9 (41.1-58.9) mg/L)	Immobilization	High	11328280
75-34-3	24-48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.1 mg/L / 6.98 (6.3-8.03) mg/L / 12.2 (10.8-14.1) mg/L / 22.8 (19.9-26.5) mg/L / 37.4 (33.4-41.4) mg/L / 60 (56.2-65.1) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	NR (6.98-60 mg/L)	Immobilization	High	11328280

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.1 mg/L / 6.98 (6.3-8.03) mg/L / 12.2 (10.8-14.1) mg/L / 22.8 (19.9-26.5) mg/L / 37.4 (33.4-41.4) mg/L / 60 (56.2-65.1) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC50 (34.3 (30.0-39.1) mg/L)	Immobilization	High	11328280
75-34-3	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.1 mg/L / 6.98 (6.3-8.03) mg/L / 12.2 (10.8-14.1) mg/L / 22.8 (19.9-26.5) mg/L / 37.4 (33.4-41.4) mg/L / 60 (56.2-65.1) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC100 (60.0 mg/L)	Immobilization	High	11328280
75-34-3	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 hour(s), Female, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY, OBTAINED JULY 18, 1995)	Fresh water, Aqueous (aquatic habitat), Renewal, Not Reported	Measured	<0.1 mg/L / 6.98 (6.3-8.03) mg/L / 12.2 (10.8-14.1) mg/L / 22.8 (19.9-26.5) mg/L / 37.4 (33.4-41.4) mg/L / 60 (56.2-65.1) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC0 (12.2 mg/L)	Immobilization	High	11328280

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Aquatic: Arthropods Extraction Table										
CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), Not reported, Not reported, Laboratory (NATIONAL INSTITUTE FOR ENVIRONMENTAL STUDIES, ENVIRONMENT AGENCY)	Not reported, Aqueous (aquatic habitat), Not reported, Not Reported	Unmeasured	0 mg/L / 0.10 mg/L / 1.0 mg/L / 10 mg/L / 100 mg/L	Physiology (Intoxication-Immobilization, Response Site: Not reported)	NR (0.10-100 mg/L)	Immobilization	Uninformative	11328280

* 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: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	24 Hour(s), (96 Hour(s))	<i>Americamysis bahia</i> (Opossum Shrimp), <24 Hour(s), Not Reported, Laboratory (FROM AN ESTABLISHED ESE LABORATORY CULTURE)	Salt water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 4.92 mg/L / 6.89 mg/L / 10.88 mg/L / 18.42 mg/L / 26.65 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (4.92 mg/L)	Mortality	High	5468652
78-87-5	72 Hour(s), (96 Hour(s))	<i>Americamysis bahia</i> (Opossum Shrimp), 3-4 Day(s), Not Reported, Laboratory (FROM AN ESTABLISHED ESE LABORATORY CULTURE)	Salt water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 4.92 mg/L / 6.89 mg/L / 10.88 mg/L / 18.42 mg/L / 26.65 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (100 mg/L)	Mortality	High	5468652
78-87-5	96 Hour(s), (96 Hour(s))	<i>Americamysis bahia</i> (Opossum Shrimp), <24 Hour(s), Not Reported, Laboratory (FROM AN ESTABLISHED ESE LABORATORY CULTURE)	Salt water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 4.92 mg/L / 6.89 mg/L / 10.88 mg/L / 18.42 mg/L / 26.65 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (4.92 mg/L); LC50 (24.79 (4.92- >26.62) mg/L)	Mortality	High	5468652
78-87-5	96 Hour(s), (96 Hour(s))	<i>Americamysis bahia</i> (Opossum Shrimp), 3-4 Day(s), Not Reported, Laboratory (FROM AN ESTABLISHED ESE LABORATORY CULTURE)	Salt water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 4.92 mg/L / 6.89 mg/L / 10.88 mg/L / 18.42 mg/L / 26.65 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (4.92 mg/L); LC50 (>26.65 mg/L)	Mortality	High	5468652

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	15 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Female organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 4-15 Female organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Length, Response Site: Whole organism)	MATC (>4.09 mg/L); NOEC (4.09 (2.96-5.58) mg/L)	Development/Growth	High	2803625
78-87-5	15 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Male organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 8-15 Male organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Length, Response Site: Whole organism)	MATC (>4.09 mg/L); NOEC (4.09 (2.96-5.58) mg/L)	Development/Growth	High	2803625
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Male organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 3-12 Male organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Development/Growth	High	2803625

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opussum Shrimp), Post-larva, <24 Hour(s), Both, Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Mortality	High	2803625
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opussum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Female organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 5-10 Female organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Reproduction (Reproduction-Progeny counts/numbers, Response Site: Not reported)	MATC (>4.09 mg/L); NOEC (4.09 (2.96-5.58) mg/L)	Reproductive/Teratogenic	High	2803625
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opussum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Female organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, NA Female organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Reproduction (Reproduction-Time to first progeny, Response Site: Not reported)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Reproductive/Teratogenic	High	2803625

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Female organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 5-10 Female organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Development/Growth	High	2803625
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Male organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 3-12 Male organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Weight, Response Site: Whole organism)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Development/Growth	High	2803625
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s), Both (Measured in: Female organisms), Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, 5-10 Female organisms	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Growth (Growth-Length, Response Site: Whole organism)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Development/Growth	High	2803625

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	28 Day(s), (28 Day(s))	<i>Americamysis bahia</i> (Opossum Shrimp), Post-larva, <24 Hour(s) (Measured in: F1 generation), Both, Laboratory (ORIGINAL SOURCE: BSL, PENSACOLA, FLORIDA)	Salt water, Aqueous (aquatic habitat), Flow-through, NA F1 generation	Measured	0 mg/L / 0.41 (0.14-0.77) mg/L / 0.97 (0.47-1.85) mg/L / 1.35 (0.99-1.61) mg/L / 2.48 (1.89-3.20) mg/L / 4.09 (2.96-5.58) mg/L	Mortality (Mortality-Survival, Response Site: Not reported)	NOEC (4.09 (2.96-5.58) mg/L); MATC (>4.09 mg/L)	Mortality	High	2803625
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	NOEC (66 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA F1 generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	EC10 (14 (8.3-21) mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>7.5 mg/L)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>130 mg/L)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA F1 generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	LOEC (44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA F1 generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	EC50 (43 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, 2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Unmeasured	0 mg/kg dw sediment / 8.1 mg/kg dw sediment / 27 mg/kg dw sediment / 90 mg/kg dw sediment / 300 mg/kg dw sediment / 1000 mg/kg dw sediment	Growth (Development-Emergence, Time to first emergence, Response Site: Not reported)	NR (8.1-1000 mg/kg dw sediment)	Development/Growth	Uninformative	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC20 (57 (33-85) mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC10 (37 (23-72) mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC50 (130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Population (Population-Sex ratio, Response Site: Not reported)	LOEC (>44 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Population (Population-Sex ratio, Response Site: Not reported)	NOEC (44 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA F1 generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	NOEC (19 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	NOEC (3.8 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	LOEC (130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA F1 generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	EC20 (18 (13-27) mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>7.5 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>7.5 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Population (Population-Sex ratio, Response Site: Not reported)	NOEC (130 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>7.5 mg/L)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Population (Population-Sex ratio, Response Site: Not reported)	LOEC (>130 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Population (Population-Sex ratio, Response Site: Not reported)	NOEC (7.5 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Population (Population-Sex ratio, Response Site: Not reported)	LOEC (>7.5 mg/L)	Reproductive/Teratogenic	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>7.5 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>7.5 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 1st generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>44 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WARHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC10 (2.5 (1.9-4.3) mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC20 (3.6 (2.4-5.2) mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC50 (7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (7.5 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: F1 generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA F1 generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	LOEC (7.5 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male and female, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>130 mg/L)	Development/Growth	Medium	10706027

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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
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>130 mg/L)	Development/Growth	Medium	10706027
79-00-5	2 Generation, (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch (Measured in: male, 1st generation), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 1st generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>130 mg/L)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Day(s), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, Not Reported	Unmeasured	0 mg/L / 55 mg/L / 550 mg/L / 1200 mg/L	Physiology (Intoxication-Immobilized, Response Site: Not reported)	NR (55-1200 mg/L)	Immobilization	Uninformative	10706027
79-00-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Larva, 3 Day(s), Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, Not Reported	Unmeasured	0 mg/kg dw sediment / 100 mg/kg dw sediment / 1000 mg/kg dw sediment / 2500 mg/kg dw sediment	Physiology (Intoxication-Immobilized, Response Site: Not reported)	NR (100-2500 mg/kg dw sediment)	Immobilization	Uninformative	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	EC50 (>6.4 mg/L)	Reproductive/Teratogenic	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fertility, Response Site: Not reported)	EC20 (>120 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (120 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>6.4 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fertility, Response Site: Not reported)	NOEC (6.4 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>6.4 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>120 mg/L)	Development/Growth	Medium	10706027
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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>120 mg/L)	Development/Growth	Medium	10706027
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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, 2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Unmeasured	0 mg/kg dw sediment / 8.1 mg/kg dw sediment / 27 mg/kg dw sediment / 90 mg/kg dw sediment / 300 mg/kg dw sediment / 1000 mg/kg dw sediment	Reproduction (Reproduction-Fecundity, Fertility, Response Site: Not reported)	NR (8.1-1000 mg/kg dw sediment)	Reproductive/Teratogenic	Uninformative	10706027
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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Population (Population-Sex ratio, Response Site: Not reported)	NOEC (120 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	LOEC (>6.4 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	EC20 (>6.4 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	EC20 (>120 mg/L)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>120 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEC (6.4 mg/L)	Reproductive/Teratogenic	Medium	10706027
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Aquatic: Arthropods Extraction Table

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	LOEC (>30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	EC10 (>30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027

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Aquatic: Arthropods Extraction Table

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 0th (parent) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Emergence, Response Site: Not reported)	LOEC (>30 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>30 mg/kg dw sediment)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Reproduction (Reproduction-Fertility, Response Site: Not reported)	LOEC (>30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (30 mg/kg dw sediment)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (30 mg/kg dw sediment)	Development/Growth	Medium	10706027

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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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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>120 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	EC10 (>120 mg/L)	Reproductive/Teratogenic	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (120 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC50 (>6.4 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Emergence, Response Site: Not reported)	EC10 (>6.4 mg/L)	Development/Growth	Medium	10706027
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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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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>6.4 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEC (120 mg/L)	Reproductive/Teratogenic	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	NOEC (6.4 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching , NA male and female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC10 (>6.4 mg/L)	Development/Growth	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Reproduction (Reproduction-Fecundity, Response Site: Not reported)	NOEC (30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027

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79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>30 mg/kg dw sediment)	Development/Growth	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Population (Population-Sex ratio, Response Site: Not reported)	NOEC (30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Reproduction (Reproduction-Fertility, Response Site: Not reported)	EC50 (>30 mg/kg dw sediment)	Reproductive/Teratogenic	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Sediment, NA male and female, 0th (parental) generation	Measured	<0.50 mg/kg dw sediment / <0.50-13 mg/kg dw sediment / <0.50-20 mg/kg dw sediment / <0.50-52 mg/kg dw sediment / <0.50-73 mg/kg dw sediment / <0.50-170 mg/kg dw sediment	Growth (Development-Time to first emergence, Response Site: Not reported)	EC20 (>30 mg/kg dw sediment)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Growth (Development-Time to first emergence, Response Site: Not reported)	EC50 (>120 mg/L)	Development/Growth	Medium	10706027
79-00-5	28 Day(s), (2 Generation)	<i>Chironomus riparius</i> (Midge), Larva, <=2 Days post-hatch, Not Reported, Laboratory (FROM SMITHERS LABORATORY CULTURE, WAREHAM, MASSACHUSETTS)	Fresh water, Aqueous (aquatic habitat), Leaching, NA female, 0th (parental) generation	Measured	<0.010 mg/L / <0.010-38 mg/L / <0.010-65 mg/L / <0.010-130 mg/L / <0.010-260 mg/L / <0.010-530 mg/L	Reproduction (Reproduction-Fertility, Response Site: Not reported)	NOEC (120 mg/L)	Reproductive/Teratogenic	Medium	10706027

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	24 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.5 (3.9-5.0) mg/L / 10 (9.9-11) mg/L / 20 (19-21) mg/L / 41 (41-42) mg/L / 84 (80-92) mg/L / 170 (150-180) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC50 (>170 (150-180) mg/L)	Immobilization	High	11424404
78-87-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.5 (3.9-5.0) mg/L / 10 (9.9-11) mg/L / 20 (19-21) mg/L / 41 (41-42) mg/L / 84 (80-92) mg/L / 170 (150-180) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	NR (3.9-180 mg/L)	Immobilization	High	11424404
78-87-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.5 (3.9-5.0) mg/L / 10 (9.9-11) mg/L / 20 (19-21) mg/L / 41 (41-42) mg/L / 84 (80-92) mg/L / 170 (150-180) mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR (3.9-180 mg/L)	Mortality	High	11424404
78-87-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.5 (3.9-5.0) mg/L / 10 (9.9-11) mg/L / 20 (19-21) mg/L / 41 (41-42) mg/L / 84 (80-92) mg/L / 170 (150-180) mg/L	Behavior (Behavior-Activity, general, Response Site: Not reported)	NR (3.9-180 mg/L)	Behavioral	High	11424404

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 mg/L / 1.0 mg/L / 10 mg/L / 100 mg/L / 300 mg/L / 1000 mg/L	Behavior (Behavior-Activity, general, Response Site: Not reported)	NR (100-1000 mg/L)	Behavioral	High	11424404
78-87-5	48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.5 (3.9-5.0) mg/L / 10 (9.9-11) mg/L / 20 (19-21) mg/L / 41 (41-42) mg/L / 84 (80-92) mg/L / 170 (150-180) mg/L	Physiology (Intoxication-Immobile, Response Site: Not reported)	EC50 (49 (43-56) mg/L)	Immobilization	High	11424404
78-87-5	24-48 Hour(s), (48 Hour(s))	<i>Chironomus riparius</i> (Midge), Instar, 2 Days post-hatch, Not Reported, Laboratory (SMITHERS CULTURE)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 mg/L / 1.0 mg/L / 10 mg/L / 100 mg/L / 300 mg/L / 1000 mg/L	Multiple (Multiple-Multiple effects reported as one result, Response Site: Not reported)	NR (1.0-1000 mg/L)	Mortality	High	11424404
107-06-2	~3 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>300-<400 ppm)	Mortality	Uninformative	5442093
107-06-2	7 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (300 ppm)	Mortality	Uninformative	5442093

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
107-06-2	>5-<10 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>200-<300 ppm)	Mortality	Uninformative	5442093
107-06-2	~15 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (~200 ppm)	Mortality	Uninformative	5442093
107-06-2	24 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (170 ppm)	Mortality	Uninformative	5442093
107-06-2	~30 Hour(s), (~30 Hour(s))	<i>Crangon crangon</i> (Sand Shrimp), Not reported, Not Reported, Wild (COLLECTED OUTSIDE BORNO)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (~170 ppm)	Mortality	Uninformative	5442093
78-87-5	24 Hour(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (86.3 mg/L)	Mortality	High	5468652
78-87-5	24 Hour(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Unmeasured values (some measured values reported in article)	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>72.9 mg/L)	Mortality	High	5468652

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-87-5	48 Hour(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (45 mg/L)	Mortality	High	5468652
78-87-5	48 Hour(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Unmeasured values (some measured values reported in article)	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (55.9 (39.5-72.9) mg/L); LC50 (64.1 (45.0-87.0) mg/L)	Mortality	High	5468652
78-87-5	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Multiple (Multiple-Multiple effects reported as one result, Response Site: Not reported)	MATC (18.4 mg/L); NOEC (15.8 mg/L); LOEC (21.5 mg/L)	Reproductive/Teratogenic	High	5468652
78-87-5	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LOEC (21.5 mg/L); MATC (18.4 mg/L); NOEC (15.8 mg/L)	Mortality	High	5468652
78-87-5	21 Day(s), (21 Day(s))	<i>Daphnia magna</i> (Water Flea), Neonate, Not Reported, Laboratory (FROM THE DOW CHEMICAL COMPANY)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.02 mg/L / 8.3 mg/L / 15.8 mg/L / 21.5 mg/L / 39.5 mg/L / 72.9 mg/L	Reproduction (Reproduction-Progeny counts/numbers, Response Site: Not reported)	MATC (11.4 mg/L); NOEC (8.3 mg/L); LOEC (15.8 mg/L)	Reproductive/Teratogenic	High	5468652

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
107-06-2	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (250 (190-320) mg/L)	Mortality	Medium	7508
78-87-5	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (99 (58-600) mg/L)	Mortality	Medium	7508
156-60-5	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (230 (200-280) mg/L)	Mortality	Medium	7508
79-00-5	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (19 (14-26) mg/L)	Mortality	Medium	7508

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
71-55-6	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>530 mg/L)	Mortality	Medium	7508
78-99-9	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (30 (20-45) mg/L)	Mortality	Medium	7508
75-35-4	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (98 (71-130) mg/L)	Mortality	Medium	7508
142-28-9	24 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (490 (360-710) mg/L)	Mortality	Medium	7508

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
78-99-9	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (<6.8 mg/L); LC50 (23 (13-37) mg/L)	Mortality	Medium	7508
142-28-9	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (68 mg/L); LC50 (280 (200-390) mg/L)	Mortality	Medium	7508
75-35-4	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (<2.4 mg/L)	Mortality	Medium	7508
71-55-6	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (530 mg/L)	Mortality	Medium	7508

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
71-55-6	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>530 mg/L)	Mortality	Medium	7508
79-00-5	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (1.0 mg/L); LC50 (18 (11-32) mg/L)	Mortality	Medium	7508
156-60-5	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (<110 mg/L); LC50 (220 (170-290) mg/L)	Mortality	Medium	7508
78-87-5	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LABORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (52 (42-68) mg/L); NOEC (<22 mg/L)	Mortality	Medium	7508

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Aquatic: Arthropods Extraction Table

CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Source	Exposure Media, Route Grouping, Type, Sample Number	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Health Effect as reported by the Study Author(s)	Effect Level as reported by the Study Author(s)*	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
107-06-2	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LAB-ORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	NOEC (<68 mg/L); LC50 (220 (160-280) mg/L)	Mortality	Medium	7508
75-35-4	48 Hour(s), (48 Hour(s))	<i>Daphnia magna</i> (Water Flea), <=24 Hour(s), Not Reported, Laboratory (FROM LAB-ORATORY STOCKS AT EG&G BIO-NOMICS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (79 (62-110) mg/L)	Mortality	Medium	7508

* 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
107-06-2	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 30 Organism	Measured	0.3 mg/L / 4 mg/L / 7 mg/L / 14 mg/L / 29 mg/L / 59 mg/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NOEC (59 mg/L)	Mortality	High	18052
107-06-2	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.3 mg/L / 4 mg/L / 7 mg/L / 14 mg/L / 29 mg/L / 59 mg/L	Growth (Development-Normal, Response Site: Not reported)	NOEC (59 mg/L)	Development/Growth	High	18052
78-87-5	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.1 mg/L / 6 mg/L / 11 mg/L / 25 mg/L / 51 mg/L / 110 mg/L	Growth (Development-Normal, Response Site: Not reported)	NOEC (25 mg/L); LOEC (51 mg/L)	Development/Growth	High	18052
78-87-5	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 30 Organism	Measured	0.1 mg/L / 6 mg/L / 11 mg/L / 25 mg/L / 51 mg/L / 110 mg/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NOEC (110 mg/L)	Mortality	High	18052
142-28-9	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.2 mg/L / 4 mg/L / 8 mg/L / 16 mg/L / 32 mg/L / 65 mg/L	Growth (Development-Normal, Response Site: Not reported)	LOEC (65 mg/L); NOEC (32 mg/L)	Development/Growth	High	18052
142-28-9	4-5 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 30 Organism	Measured	0.2 mg/L / 4 mg/L / 8 mg/L / 16 mg/L / 32 mg/L / 65 mg/L	Mortality (Mortality-Hatch, Response Site: Not reported)	NOEC (65 mg/L)	Mortality	High	18052

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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
142-28-9	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 15 Organism	Measured	0.2 mg/L / 4 mg/L / 8 mg/L / 16 mg/L / 32 mg/L / 65 mg/L	Mortality (Mortality-Survival, Response Site: Not reported)	LOEC (65 mg/L); NOEC (32 mg/L)	Mortality	High	18052
107-06-2	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 15 Organism	Measured	0.3 mg/L / 4 mg/L / 7 mg/L / 14 mg/L / 29 mg/L / 59 mg/L	Mortality (Mortality-Survival, Response Site: Not reported)	NOEC (59 mg/L)	Mortality	High	18052
78-87-5	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.1 mg/L / 6 mg/L / 11 mg/L / 25 mg/L / 51 mg/L / 110 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	MATC (6-11 mg/L); LOEC (11 mg/L); NOEC (6 mg/L)	Development/Growth	High	18052
78-87-5	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, 15 Organism	Measured	0.1 mg/L / 6 mg/L / 11 mg/L / 25 mg/L / 51 mg/L / 110 mg/L	Mortality (Mortality-Survival, Response Site: Not reported)	LOEC (25 mg/L); NOEC (11 mg/L)	Mortality	High	18052
142-28-9	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.2 mg/L / 4 mg/L / 8 mg/L / 16 mg/L / 32 mg/L / 65 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	MATC (8-16 mg/L); LOEC (16 mg/L); NOEC (8 mg/L)	Development/Growth	High	18052
107-06-2	32-33 Day(s), (32-33 Day(s))	<i>Pimephales promelas</i> (Fat-head Minnow), Egg, 2-8 hours post-spawn, Not Reported, Laboratory	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0.3 mg/L / 4 mg/L / 7 mg/L / 14 mg/L / 29 mg/L / 59 mg/L	Growth (Growth-Weight, Response Site: Whole organism)	MATC (29-59 mg/L); NOEC (29 mg/L); LOEC (59 mg/L)	Development/Growth	High	18052

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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
142-28-9	1 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>150-<175 mg/L)	Mortality	High	32169
79-00-5	1 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.01-<0.05 mg/L / 32.6-40.0 mg/L / 51.4-68.4 mg/L / 95.0-119 mg/L / 152-203 mg/L / 219-286 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>105-<152.5 mg/L)	Mortality	High	32169
78-87-5	3 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 44.7-52.9 mg/L / 54.2-80.8 mg/L / 114-184 mg/L / 146-280 mg/L / 264-421 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>200-<250 mg/L)	Mortality	High	32169

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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
107-06-2	3 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 36.4-68.5 mg/L / 52.7-129 mg/L / 124-258 mg/L / 212-361 mg/L / 316-736 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>325-<400 mg/L)	Mortality	High	32169
142-28-9	6 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>150-<175 mg/L)	Mortality	High	32169
79-00-5	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.01-<0.05 mg/L / 32.6-40.0 mg/L / 51.4-68.4 mg/L / 95.0-119 mg/L / 152-203 mg/L / 219-286 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>57.5-<105 mg/L)	Mortality	High	32169

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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
142-28-9	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>125-<150 mg/L)	Mortality	High	32169
107-06-2	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 36.4-68.5 mg/L / 52.7-129 mg/L / 124-258 mg/L / 212-361 mg/L / 316-736 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>100-<175 mg/L)	Mortality	High	32169
78-87-5	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 44.7-52.9 mg/L / 54.2-80.8 mg/L / 114-184 mg/L / 146-280 mg/L / 264-421 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>150-<200 mg/L)	Mortality	High	32169

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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
107-06-2	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 36.4-68.5 mg/L / 52.7-129 mg/L / 124-258 mg/L / 212-361 mg/L / 316-736 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>100-<175 mg/L)	Mortality	High	32169
78-87-5	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 44.7-52.9 mg/L / 54.2-80.8 mg/L / 114-184 mg/L / 146-280 mg/L / 264-421 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>100-<150 mg/L)	Mortality	High	32169
142-28-9	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>125-<150 mg/L)	Mortality	High	32169

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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
142-28-9	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>125-<150 mg/L)	Mortality	High	32169
107-06-2	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 36.4-68.5 mg/L / 52.7-129 mg/L / 124-258 mg/L / 212-361 mg/L / 316-736 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>100-<175 mg/L)	Mortality	High	32169
78-87-5	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 44.7-52.9 mg/L / 54.2-80.8 mg/L / 114-184 mg/L / 146-280 mg/L / 264-421 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (>100-<150 mg/L)	Mortality	High	32169

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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
78-87-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 44.7-52.9 mg/L / 54.2-80.8 mg/L / 114-184 mg/L / 146-280 mg/L / 264-421 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (127 (119-135) mg/L)	Mortality	High	32169
79-00-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<0.01-<0.05 mg/L / 32.6-40.0 mg/L / 51.4-68.4 mg/L / 95.0-119 mg/L / 152-203 mg/L / 219-286 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (81.6 mg/L)	Mortality	High	32169
142-28-9	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	0 mg/L / 21.0-25.9 mg/L / 37.8-44.9 mg/L / 76.4-94.3 mg/L / 109-130 mg/L / 208-220 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (131 (125-137) mg/L)	Mortality	High	32169

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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
107-06-2	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 31 Day(s), Not Reported, Laboratory (US EPA ENVIRONMENTAL RESEARCH LABORATORY DULUTH AND THE UNIVERSITY OF WISCONSIN SUPERIOR)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	<1.0 mg/L / 36.4-68.5 mg/L / 52.7-129 mg/L / 124-258 mg/L / 212-361 mg/L / 316-736 mg/L	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (136 (129-144) mg/L)	Mortality	High	32169
107-06-2	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (141 (131-153) mg/L)	Mortality	Medium	4259619
78-87-5	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (194 (184-205) mg/L)	Mortality	Medium	4259619
79-00-5	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (133 (126-139) mg/L)	Mortality	Medium	4259619
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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
79-00-5	24 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (81.6 (60.9-109) mg/L)	Mortality	Medium	4259619
79-00-5	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (131 (124-137) mg/L)	Mortality	Medium	4259619
79-00-5	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (81.6 (60.9-109) mg/L)	Mortality	Medium	4259619
78-87-5	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (154 (144-166) mg/L)	Mortality	Medium	4259619
107-06-2	48 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (118 (111-125) mg/L)	Mortality	Medium	4259619

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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
78-87-5	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (141 (132-151) mg/L)	Mortality	Medium	4259619
79-00-5	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (81.6 (60.9-109) mg/L)	Mortality	Medium	4259619
107-06-2	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (116 (110-123) mg/L)	Mortality	Medium	4259619
79-00-5	72 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (131 (124-137) mg/L)	Mortality	Medium	4259619
79-00-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (131 (124-137) mg/L)	Mortality	Medium	4259619

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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
107-06-2	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (116 (110-123) mg/L)	Mortality	Medium	4259619
107-06-2	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Physiology (Intoxication-Intoxication, general, Response Site: Not reported)	NR (NR)	Behavioral	Uninformative	4259619
78-87-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Physiology (Intoxication-Intoxication, general, Response Site: Not reported)	NR (NR)	Behavioral	Uninformative	4259619
78-87-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (140 (131-150) mg/L)	Mortality	Medium	4259619
79-00-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (81.6 (60.9-109) mg/L)	Mortality	Medium	4259619

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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
142-28-9	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Physiology (Intoxication-Intoxication, general, Response Site: Not reported)	NR (NR)	Behavioral	Uninformative	4259619
79-00-5	96 Hour(s), (96 Hour(s))	<i>Pimephales promelas</i> (Fat-head Minnow), 30-35 Day(s), Not Reported, Laboratory (LABORATORY-REARED)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	Not Coded	Physiology (Intoxication-Intoxication, general, Response Site: Not reported)	NR (NR)	Behavioral	Uninformative	4259619

* 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: Non-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
78-87-5	4 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	NOEC (38.0 mg/L)	Development/Growth	Medium	2797876
78-87-5	4 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (83.0 mg/L)	Development/Growth	Medium	2797876
78-87-5	7 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	NOEC (31.5 mg/L)	Development/Growth	Medium	2797876

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Aquatic: Non-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
78-87-5	7 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (62.0 mg/L)	Development/Growth	Medium	2797876
78-87-5	10 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	NOEC (29.0 mg/L)	Development/Growth	Medium	2797876
78-87-5	10 Day(s), (10 Day(s))	<i>Chlamydomonas reinhardtii</i> (Green Algae), Exponential growth phase (log), Not Reported, Laboratory (OBTAINED FROM SAMM-LUNG VON ALGENKULTUREN (SAG), UNIVERSITY OF GOTTINGEN, D-3400 GOTTINGEN)	Fresh water, Aqueous (aquatic habitat), Flow-through, Not Reported	Measured	NR / NR	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (50.0 mg/L)	Development/Growth	Medium	2797876

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Aquatic: Non-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
78-87-5	5 Day(s), (5 Day(s))	<i>Selenastrum capricornutum</i> (Green Algae), 7 Day(s), Not Reported, Laboratory (LAB STOCK CULTURE ORIGINALLY FROM THE UNIVERSITY OF TEXAS CULTURE COLLECTION, AUSTIN, TEXAS)	Fresh water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 18.05-86.75 mg/L / 19.25-139.78 mg/L / 38.24-280.21 mg/L / 9.59-441.77 mg/L / 29.33-675.93 mg/L	Population (Population-Biomass, Response Site: Not reported)	NOEC (29.33-675.93 mg/L)	Development/Growth	High	5468652
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (15.4 (12.9-17.9) mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	EC10 (11.3 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	NOEC (8.50 mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Population growth rate, Response Site: Not reported)	LOEC (16.5 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Abundance, Response Site: Not reported)	LOEC (16.5 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Abundance, Response Site: Not reported)	NOEC (8.50 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Biomass, Response Site: Not reported)	NOEC (8.50 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Abundance, Response Site: Not reported)	EC50 (18.6 (12.6-27.6) mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	EC50 (15.3 (13.4-17.2) mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	EC10 (8.47 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	LOEC (16.5 mg/L)	Development/Growth	Medium	10610562
78-87-5	72 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	EC10 (5.58 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population growth rate, Response Site: Not reported)	LOEC (18.5 mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Population growth rate, Response Site: Not reported)	NOEC (13.2 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Population growth rate, Response Site: Not reported)	EC10 (10.6 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Population growth rate, Response Site: Not reported)	EC50 (15.1 (11.4-18.8) mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Biomass, Response Site: Not reported)	EC10 (8.49 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population- Biomass, Response Site: Not reported)	EC50 (12.6 (11.3-13.8) mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	NOEC (13.2 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	LOEC (18.5 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	LOEC (13.2 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	EC10 (5.55 mg/L)	Development/Growth	Medium	10610562
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	EC50 (16.8 (11.7-22.0) mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	96 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	NOEC (7.12 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	EC10 (6.19 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	LOEC (19.4 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	NOEC (6.87 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	LOEC (10.9 mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	LOEC (19.4 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	EC50 (12.27 (2.93-22.5) mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	EC10 (10.2 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	EC50 (15.6 (9.29-21.9) mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	EC10 (5.13 mg/L)	Development/Growth	Medium	10610562

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Aquatic: Non-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
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Abundance, Response Site: Not reported)	NOEC (10.9 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Population growth rate, Response Site: Not reported)	NOEC (10.9 mg/L)	Development/Growth	Medium	10610562
78-87-5	120 Hour(s), (120 Hour(s))	<i>Skeletonema costatum</i> (Diatom), Not reported, Not Reported, Not reported (NR)	Not reported, Aqueous (aquatic habitat), Static, Not Reported	Measured	<1 ppb / 4.87-5.43 mg/L / 6.87-8.50 mg/L / 10.9-16.5 mg/L / 18.5-26.3 mg/L / 32.8-38.6 mg/L	Population (Population-Biomass, Response Site: Not reported)	EC50 (11.0 (9.44-12.6) mg/L)	Development/Growth	Medium	10610562
78-87-5	5 Day(s), (5 Day(s))	<i>Skeletonema costatum</i> (Diatom), 11 Day(s), Not Reported, Laboratory (FROM LAB STOCK, ORIGINALLY FROM USEPA, ENVIRONMENTAL RESEARCH LABORATORY, GULF BREEZE, FLORIDA)	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Measured	0 mg/L / 4.10-5.67 mg/L / 4.20-11.10 mg/L / 5.02-24.03 mg/L / 6.44-36.10 mg/L / 17.10-67.93 mg/L	Population (Population-Biomass, Response Site: Not reported)	NOEC (4.20-11.10 mg/L); LOEC (5.02-24.03 mg/L)	Development/Growth	High	5468652

* 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: 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
107-06-2	NA Until hatch, (NA Until hatch)	<i>Ophryotrocha labronica</i> (Polychaete), Adult, Both, Laboratory	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 200 ppm / 400 ppm / 600 ppm	Reproduction (Reproduction-Hatch, Response Site: Not reported)	NR (50-600 ppm)	Reproductive/Teratogenic	High	5442093
79-00-5	NA Until hatch, (NA Until hatch)	<i>Ophryotrocha labronica</i> (Polychaete), Adult, Both, Laboratory	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 25 ppm / 50 ppm / 75 ppm / 100 ppm / 150 ppm / 200 ppm	Reproduction (Reproduction-Hatch, Response Site: Not reported)	NR (25-200 ppm)	Reproductive/Teratogenic	High	5442093
107-06-2	24 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (800 ppm)	Mortality	Uninformative	5442093
79-00-5	24 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (200 ppm)	Mortality	Uninformative	5442093

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Aquatic: 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
107-06-2	96 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (900 ppm)	Mortality	Uninformative	5442093
107-06-2	96 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (400 ppm)	Mortality	Uninformative	5442093
79-00-5	96 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (500 ppm)	Mortality	Uninformative	5442093
79-00-5	96 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	LC50 (160 ppm)	Mortality	Uninformative	5442093

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Aquatic: 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
79-00-5	144 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-LETH (600 ppm)	Mortality	Uninformative	5442093
79-00-5	216 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Behavior (Behavior-Activity, general, Response Site: Not reported)	NR (100-600 ppm)	Behavioral	Uninformative	5442093
79-00-5	216 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (400 ppm)	Mortality	Uninformative	5442093
107-06-2	216 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (150 ppm)	Mortality	Uninformative	5442093

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Aquatic: 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
107-06-2	216 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Behavior (Behavior-Activity, general, Response Site: Not reported)	NR (800 ppm)	Behavioral	Uninformative	5442093
107-06-2	216 Hour(s), (216 Hour(s))	<i>Ophryotrocha labronica</i> (Polychaete), Not reported, Not Reported, Laboratory	Salt water, Aqueous (aquatic habitat), Renewal, Not Reported	Unmeasured	0 ppm / 100 ppm / 150 ppm / 200 ppm / 250 ppm / 300 ppm / 400 ppm / 600 ppm / 800 ppm / 1000 ppm / 2000 ppm	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (800 ppm)	Mortality	Uninformative	5442093
107-06-2	~15 Day(s), (NA Until hatch)	<i>Ophryotrocha labronica</i> (Polychaete), Adult, Both, Laboratory	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 50 ppm / 100 ppm / 200 ppm / 400 ppm / 600 ppm	Reproduction (Reproduction-Progeny counts/numbers, Response Site: Not reported)	NR (50-600 ppm)	Reproductive/Teratogenic	High	5442093
79-00-5	~15 Day(s), (NA Until hatch)	<i>Ophryotrocha labronica</i> (Polychaete), Adult, Both, Laboratory	Salt water, Aqueous (aquatic habitat), Static, Not Reported	Unmeasured	0 ppm / 25 ppm / 50 ppm / 75 ppm / 100 ppm / 150 ppm / 200 ppm	Reproduction (Reproduction-Progeny counts/numbers, Response Site: Not reported)	NR (25-200 ppm)	Reproductive/Teratogenic	High	5442093

* 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: 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
78-87-5	1 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Male, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	LOEL (200 mg/kg bdwt/d); NOEL (65 mg/kg bdwt/d)	Nutritional and Metabolic	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Not Reported, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Mortality (Mortality-Mortality, Response Site: Not reported)	NR-ZERO (200 mg/kg bdwt/d)	Mortality	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Female, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Physiology (Physiology-Body temperature, Response Site: Not reported)	LOEL (200 mg/kg bdwt/d); NOEL (65 mg/kg bdwt/d)	Nutritional and Metabolic	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Female, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Behavior (Behavior-Movements, number of, Response Site: Not reported)	NOEL (200 mg/kg bdwt/d)	Behavioral	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Female, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Growth (Growth-Weight, Response Site: Whole organism)	NOEL (200 mg/kg bdwt/d)	Nutritional and Metabolic	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Male, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Physiology (Physiology-Body temperature, Response Site: Not reported)	LOEL (200 mg/kg bdwt/d); NOEL (65 mg/kg bdwt/d)	Nutritional and Metabolic	High	5468652
78-87-5	13 Week(s), (13 Week(s))	<i>Rattus norvegicus</i> (Norway Rat), 7 Week(s), Male, Laboratory	No substrate, Oral (diet, drink, gavage), Gavage, Not Reported	Measured	0 mg/kg bdwt/d / 20 mg/kg bdwt/d / 65 mg/kg bdwt/d / 200 mg/kg bdwt/d	Behavior (Behavior-Movements, number of, Response Site: Not reported)	NOEL (200 mg/kg bdwt/d)	Neurological	High	5468652

* 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.

Data Extraction of Rodent Data for the Application of Environmental Hazard										
CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Strain	Exposure Type	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Hazard Effect/ Hazard Level	Effect Level as reported by the Study Author(s)	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	52 weeks, (52 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileM, B6C3F1	Drinking Water	Unmeasured	0 mg/L / 835 mg/L / 2500 mg/L	543	52 week NOAEL	Behavior	High	200427
75-34-3	52 weeks, (52 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileM, B6C3F1	Drinking Water	Unmeasured	0 mg/L / 835 mg/L / 2500 mg/L	543	52 week NOAEL	Growth	High	200427
75-34-3	52 weeks, (52 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileM, B6C3F1	Drinking Water	Unmeasured	0 mg/L / 835 mg/L / 2500 mg/L	543	52 week NOAEL	Mortality	High	200427
75-34-3	13 weeks, (13 weeks)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/day / 0.5 g/kg bw/d / 1.0 g/kg bw/d / 2.0 g/kg bw/d / 4.0 g/kg bw/d	714/1429	13 week NOAEL/LOAEL	Behavior	Medium	644914
75-34-3	10 days, (10 days)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/d / 1 g/kg bw/d / 2 g/kg bw/d / 4 g/kg bw/d	4000	10 day NOAEL	Reproduction	High	644914
75-34-3	13 weeks, (13 weeks)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/d / 0.5 g/kg bw/d / 1.0 g/kg bw/d / 2.0 g/kg bw/d / 4.0 g/kg bw/d	2857	13 week NOAEL	Reproduction	High	644914
75-34-3	10 days, (10 days)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/d / 1 g/kg bw/d / 2 g/kg bw/d / 4 g/kg bw/d	1000	10 day LOAEL	Growth	High	644914
75-34-3	13 weeks, (13 weeks)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/d / 0.5 g/kg bw/d / 1.0 g/kg bw/d / 2.0 g/kg bw/d / 4.0 g/kg bw/d	714/1429	13 week NOAEL/LOAEL	Growth	High	644914

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Data Extraction of Rodent Data for the Application of Environmental Hazard										
CASRN	Exposure and Overall Duration	Test Organism Species, Age, Sex, Strain	Exposure Type	Test Analysis Exposure Parameters	Dose/ Concentration for Each Main Group of the Study	Hazard Effect/ Hazard Level	Effect Level as reported by the Study Author(s)	Health Outcome Identified by the Assessor	Overall Quality Determination	HERO ID
75-34-3	13 weeks, (13 weeks)	Rat, Sampling Age:Adult Exposure Age: AdultM, Sprague-Dawley	Gavage	Unmeasured	0 g/kg bw/d / 0.5 g/kg bw/d / 1.0 g/kg bw/d / 2.0 g/kg bw/d / 4.0 g/kg bw/d	1429/2857	13 week NOAEL/LOAEL	Mortality	High	644914
75-34-3	78 weeks, (78 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileM, B6C3F1	Gavage	Unmeasured	0 mg/kg/bw/d / 1442 mg/kg/bw/d / 2885 mg/kg/bw/d	2061	78 week NOAEL	Reproduction	High	646679
75-34-3	78 weeks, (78 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileF, B6C3F1	Gavage	Unmeasured	0 mg/kg/bw/d / 1665 mg/kg/bw/d / 3331 mg/kg/bw/d	1189/2379	78 week NOAEL/LOAEL	Reproduction	High	646679
75-34-3	6 weeks, (6 weeks)	Mouse, Sampling Age:Not Reported Exposure Age: Not ReportedBH, B6C3F1	Gavage	Unmeasured	0 mg/kg/d / 1000 mg/kg/d / 1780 mg/kg/d / 3160 mg/kg/d / 5620 mg/kg/d / 10000 mg/kg/d	7143	6 week NOAEL	Growth	High	646679
75-34-3	78 weeks, (78 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileM, B6C3F1	Gavage	Unmeasured	0 mg/kg/bw/d / 1442 mg/kg/bw/d / 2885 mg/kg/bw/d	2061	78 week NOAEL	Growth	High	646679
75-34-3	78 weeks, (78 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileF, B6C3F1	Gavage	Unmeasured	0 mg/kg/bw/d / 1665 mg/kg/bw/d / 3331 mg/kg/bw/d	2379	78 week NOAEL	Growth	High	646679
75-34-3	78 weeks, (78 weeks)	Mouse, Sampling Age:Adult Exposure Age: JuvenileF, B6C3F1	Gavage	Unmeasured	0 mg/kg/bw/d / 1665 mg/kg/bw/d / 3331 mg/kg/bw/d	1189/2379	78 week NOAEL/LOAEL	Mortality	High	646679

1,1-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD TG or use of GLP practices. Guinea pig; Not specified; Unknown	Oral: Gavage 1 days Single oral dose. It is not explicitly described if the test substance was administered via gavage or in feed, but based on limited information in the report, oral gavage seems to be the route of exposure.	POD: 300 mg/kg for mortality 300, 1000mg/kg	Guinea pigs (number, strain, and sex not specified) were fed single doses (specific doses were not specified) of 1,1-dichloroethane. It is unclear whether animals were gavaged. It was not specified whether a vehicle was used. All animals dosed with 300 mg/kg survived; however, all animals dosed with 1,000 mg/kg died. An LD50 value was not reported.	Limited details were provided in the source. Data missing include use of a vehicle, volume, animal details (number, sex, strain, etc.), an explicit statement of doses tested, and clear details regarding the route of exposure (i.e., gavage or feed).	Mortality: Low	Dow Chemical 1947 1973137
The study pre-dates OECD TG or use of GLP practices. Rabbit; Not specified; Unknown	Dermal not reported days Exposure was described in the text as "repeated"	POD: uninformative - not suitable for POD determination Not specified	In a skin irritation study, the test material (dose or volume not specified) was "repeatedly applied to the ear and bandaged onto the shaven belly of a rabbit." The number of repeated applications or duration in between was not specified. No significant irritation was observed on the ear (presumably due to evaporation). On the belly, there was marked irritation "characterized by hyperemia, exfoliation, hardening, and some mild denaturation of the skin."	This study was considered unacceptable due to the lack of critical information including dose and duration of exposure.	Irritation: Uninformative	Dow Chemical 1947 1973137
None Rat; Osborne-Mendel - [rat]; Male	Oral: Gavage Single dose Initiation protocol	POD: No evidence of tumor initiation was observed at 700 mg/kg 0, 700 mg/kg-bw/day	A variation of the Pitot rat liver foci model was conducted using male Osborne Mendel rats. Rats that had been subjected to partial hepatectomies were administered one gavage dose of 1,1-DCE at 700 mg/kg. After 5 days, animals were given either 7 weeks of phenobarbital-containing diet followed by 1 week of control diet or 8 weeks of control diet. At study termination, livers were examined histopathologically for GGT-positive foci. No increase in foci was observed in animals with or without phenobarbital. No effects were observed on body weight, body weight gain, or absolute or relative liver weights in either group.	The primary purpose of this study was to evaluate the tumor initiation and promotion potential of the chemical. Effects on body and liver weights were not the primary purpose of the study, and only minimal details are provided for these endpoints.	Cancer/Carcinogenesis: High	Milman et al. 1988 200479

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1,1-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline was specified, but the study was conducted in a manner similar or equivalent to OECD TG 423; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Male	Oral: Gavage single dose A single dose was administered and the animals were observed for 2 weeks. An additional high dose of 16000 mg/kg bw was included.	POD: 8200 mg/kg bw (LD50, mortality) 0, 1000, 2000, 4000, 8000, 12000 mg/kg-bw/day	In this acute oral study, male Sprague-Dawley rats were administered a single dose of 0, 1000, 2000, 4000, 8000, 12000, or 16000 mg/kg bw and observed for 2 weeks. Mortality was increased dose dependently at ≥ 4000 mg/kg bw. CNS depression was also observed. An LD50 of 8200 mg/kg bw (with 95% confidence limits of 4,800 -14,100 mg/kg/day) was calculated based on mortality.	The dosage volume varied by each dose, and was different from controls. Methods for evaluating CNS depression are not described and results are described qualitatively.	Mortality: High, Neurological/Behavioral: Medium	Muralidhara et al. 2001 644914
Non-guideline, non-GLP study Rat; Albino; Male	Oral: Gavage single dose Animals were administered a single gavage for 1 day.	POD: 120 mg/kg (LOAEL, liver and myocardium effects) 0, 120 mg/kg-bw/day	See footnotes for full summary ¹	Non-guideline, non-GLP, limited information provided.	Cardiovascular, Hepatic/Liver: Low	Natsyuk and Chekman 1975 5441424
A non-guideline study that predates GLP specifications. Rat; Not specified; Male	Oral: Gavage 1 days Single gavage	POD: 100mg/kg (LOEL, Liver) 0, 20% in solution	See footnotes for full summary ²	The major limitations of this study were a lack of reporting details, including information on the test material, the control, dose preparation, and outcome assessment methods. Additionally, the lack of reporting mortality data for the control group precludes the ability to interpret the significance of the observed effect in the treatment group. The study authors failed to justify the selected dose.	Hepatic/Liver: Low	Natsyuk and Fedurov 1974 5441056

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1,1-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines. The study cites FREE, H. M., and FREE, A. H. (1961). Micro-urinalysis in small animals. Proc. Intern. Congr. Biochem. 5th, Moscow, 1961 p.520. Macmillan (Pergamon), New York. Mouse; Swiss - [mouse]; Male	intraperitoneal single dose	POD: 2400 mg/kg (NOAEL, renal) 0, 1, 2, 4ml/kg	The density of 1,1-dichloroethane is 1.2 g/ml. POD was based on >50% of mice having protein and/or glucose in the urine. POD was determined by the following formula: density (g/ml) * ml/kg administered = mg/kg. 1200 mg/ml * 2 ml/kg =2400 mg/kg Male Swiss mice (10/group) were administered 1, 2 or 4 ml/kg of 1,1-dichloroethane (1200, 2400 or 4800 mg/kg, respectively) intraperitoneally once. 24 hours after injection mortality and urinary protein and glucose (via Combistix test strip) were evaluated. No mice died in the 1 or 2 ml/kg groups. At 4 ml/kg, 7/10 mice died. No increase in urinary protein or glucose were seen at 1ml/kg compared to control. 4/10 mice had increased urinary protein at 2 ml/kg (no increase in glucose was seen at this dose). At 4 ml/kg, 3/3 surviving mice had increased urinary protein, 1/3 had increased urinary glucose.	Negative controls were not run currently.	Mortality, Renal/Kidney: Un-informative	Plaa and Larson 1965 64411

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1,1-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guidelines or GLP condition were reported. Rat; Albino; Unknown	Oral: Gavage Once Rats were dosed with 0.1-0.3 or 0.5-1.0 ml of pure dichloroethane. Volumes less than 1 ml were mixed with warm tap water to bring the volume up to 1 ml. Exact doses are not provided only ranges are reported.	POD: 3,132 mg/kg (100% mortality) 0, 0.1, 0.3, 0.5, 1ml	The density of dichloroethane is 1.253 g/cm ³ or 1253 mg/ml. A dose of 0.1 ml would be equal to 1253 mg/ml X 0.1 ml = 125.3 mg. The weights of the rats were not reported; therefore, default body weights for older rats were used (0.40 kg) (Lehman, A.J. 1954). Doses were calculated as 313 mg/kg/day for 0.1 ml; (125.3 mg/0.4 kg) = 313 mg/kg/day. LOAEL of 3,132 mg/kg for mortality. Due to lack of reporting, a NOAEL could not be determined. Sexually mature albino rats were administered 0.1-0.3 ml (20 animals) or 0.5-1 ml (14 animals) of pure dichloroethane via gavage. Volumes less than 1 ml were mixed with warm tap water to bring the volume up to 1 ml. Exact doses are not provided only ranges are reported. Using default values for body weight (0.4 kg), doses studied were 313-939 mg/kg (20 animals) and 1,566-3,132 mg/kg (14 animals). The number of animals at each dose are not reported only total number of animals used for a particular dose range. Animals were sacrificed at various times after dosing (times not reported). The myocardium and liver from a sacrificed or dead experimental animal and control were studied together. Carbonic anhydrase activity in these organs were determined. Each sacrificed or dead animal had its own control when being evaluated for enzyme activity. All animals dosed with 1 ml (3,132 mg/kg) died within a few minutes after dosing. The rest of the animals died or were killed during the first 2 days (not specified which). Activity of carbonic anhydrase activity in the myocardium and liver were increased in the exposed group compared to control (data not shown).	The number of animals in each dose group is not reported. The exact doses studied are not reported. Data are not adequately reported.	Mortality: Uninformative	Sergeev and Berehnoi 1977 5441619

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1,1-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study does not state which if any compliance methods were adhered to. Rat; Random-bred albino; Both	Oral: Gavage Once	POD: 930 mg/kg (LOAEL, immune) 0, 930 mg/kg-bw/day	Random-bred albino rats of both sexes (6-10/group) were orally administered inductors of the monooxygenase system (i.e., phenobarbital (50 mg/kg) and benzenal (70 mg/kg)) for 3 days followed by an acute dose of 930 mg/kg of dichloroethane (vehicle not reported). The following immunity parameters were evaluated after dosing: humoral immune reaction to T-dependent (sheep erythrocytes) and T-independent (typhoid fever Vi antigen) antigens; activity of natural killer cells 48 hours after dosing; antibody-dependent cell cytotoxicity; and delayed type hypersensitivity (DHT) response. Significant decreases in T-cell dependent (1.71-fold) and T-cell independent (1.54-fold) humoral responses, natural cytotoxicity (1.91-fold), antibody-dependent cell cytotoxicity (1.64-fold) and DHT reaction (1.63-fold) were seen compared to control.	None.	Im-mune/Hematological: Medium	Zabrodski et al. 2004 1048005

* Overall Quality Determination

¹ 5441424: Albino rats (14-16 males/group; 2 treatment groups and two control groups) were administered a single 0.5 mL/kg dose of a 20% solution of dichloroethane in sunflower oil, via gavage. Details of the control groups (untreated or vehicle control) were not provided. Rats were sacrificed 24 hours post-dosing. Nicotinamide coenzymes (NAD⁺, NADP, NAD H₂ and NADP H₂) content were measured in the liver and myocardium. ALT and AST levels were measured in serum. Animals that died were grossly examined. Liver and myocardium tissues were subjected to histological analysis. Eight out of 38 rats dosed with the test substance died. These animals showed marked congestion of the parenchymatous organs. ALT and AST activities were significantly increased. In liver tissue, nicotinamide coenzyme contents (both oxidized and reduced forms) were significantly decreased, compared to controls. In the myocardium, there was a reduction mainly in the oxidized forms, resulting in a decrease in the ratio between oxidized and reduced forms. Histopathology results were described qualitatively in the text without an indication of whether there were significant increases in incidences, compared to controls. Congestion of the hepatic vessels with degenerative changes in the hepatocytes, and cloudy swelling and fatty degeneration, which was marked in the central zones of the hepatic lobules, was described. In the myocardium, the stromal elements were edematous and the walls of the coronary vessels showed marked plasmorrhagia, and stasis and recent thrombi were present in the vessels. NOAEL/LOAL values were not reported by the study authors. A LOAEL of 120 mg/kg was determined for this review based on evidence of liver effects. A dose in mg/kg was estimated using a density of 1.2 g/mL and adjusting for the percent on solution. 0.5mL/kg x 1.2 g/mL = 0.6g/kg. 0.6 g/kg x 20% = 0.12g/kg or 120 mg/kg.

- ² 5441056: In a study focused on measuring the therapeutic effects of methyluracil, male albino rats (strain and number/group not clearly specified; 72 rats total were used in the study) were administered 0.5 mL/kg bw of a 20% solution of dichloroethane (purity, and CASRN not specified) in sunflower oil, as a single dose via gavage (equivalent to 100 mg/kg, calculated for this review). After 24 hours, subsets of animals were treated with methyluracil. A separate group of “intact animals”, which are presumed to be a control group were included; however, the nature of the controls (e.g., untreated, vehicle) was not specified. The number of deaths was recorded. Animals were sacrificed 3 or 6 days after dichloroethane administration for serum ALT activity measurements, and evaluation of oxidative phosphorylation in liver mitochondria. Liver “antitoxic” function was also assessed 2 days before dosing and 3 and 6 days after dosing by measuring hippuric acid levels in the urine. Purportedly 36 animals were administered dichloroethane in the absence of methyluracil, and 12/36 (33%) of these animals died, typically within 4 days of dosing. In animals given methyluracil in addition to dichloroethane 2/28 (7%) died. The numbers of deaths in the control group was not reported. Three days after dosing with dichloroethane, ALT activity was markedly increased, (presumably compared with controls), and hippuric acid levels were increased by $24.6 \pm 3.1\%$ of the initial measurements. By day 6, ALT activity had decreased, but hippuric acid in the urine was increased (presumably still compared to initial levels) by $53.5 \pm 4.6\%$. Results on oxidative phosphorylation in liver mitochondria were presented quantitatively on days 3 and 6 from 8 rats/timepoint. There was a decrease in the utilization of oxygen by mitochondria that did not reach statistical significance. A decrease in the phosphorylation coefficient was also noted, with the lowest value occurring 3 days post-treatment. Administration of methyluracil restored serum ALT activity and abolished the disturbances in the mitochondria. No toxicity values were reported. Based on the reported deaths, the increased ALT (albeit transient), and increases in hippuric acid, a LOEL of 100 mg/kg was determined for this review. Although deaths are considered to be adverse, a LOAEL was not determined due to the lack of reporting mortality data in controls.

1,1-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline was reported Rat; Fischer 344 - [rat]; Male	Oral: Gavage 5 days/week 2 weeks	POD: 700 mg/kg-bw/day (NOAEL, gastrointestinal) 0, 350, 700 mg/kg-bw/day	Groups of male Fisher 344 rats (8/treatment group and 16 controls) were administered dichloroethane via gavage at 0 (corn oil control), 350, and 750 mg/kg/day 5 days/week for 2 weeks. Twenty four hours following the last exposure, animals were sacrificed and evaluated histologically for stomach lesions. The incidence of forestomach cell proliferation and hyperkeratosis was not significantly increased in dichloroethane-treated rats relative to controls.	Evaluations were limited to proliferative effects on the forestomach.	Gastrointestinal: Medium	Ghanayem et al. 1986 11728
No guideline was specified, but the study was conducted in a manner similar or equivalent to OECD TG 423; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Male	Oral: Gavage 10 days Animals were administered a single dose by oral gavage once daily for 10 days.	POD: 1000 mg/kg bw (LOAEL, decreased body weight and liver weight) 0, 1000, 2000, 4000, 8000 mg/kg-bw/day	Male Sprague-Dawley rats (8/dose) were administered the test substance via oral gavage once daily for 1, 5, or 10 days. Endpoints included mortality, CNS effects, body weight measurements, organ weight, histopathology and clinical chemistry. Mortality was observed in 3/8 animals at 8000 mg/kg bw. Dose-dependent decreases in body weight were observed at doses \geq 1000 mg/kg bw, and rats in the 2000 mg/kg bw and 4000 mg/kg bw group did not gain weight over the 10 day period. Liver weight was significantly reduced in all dose groups on day 5 and 10. Absolute kidney weight was significantly reduced at 2000 and 4000 mg/kg bw on day 10. Renal NSPH levels were slightly elevated at 2000 and 4000 mg/kg bw on day 5 and 10. No other effects on clinical chemistry were found. No histopathological effects on the liver, kidney, brain, spleen, testis, epididymis, lung, or adrenal were noted. Mild focal pneumonitis was observed in some animals including controls, but was not considered chemically induced. A LOAEL of 1000 mg/kg bw was determined based on decreased body weight and liver weight. A NOAEL was not determined.	The dosage volumes were different based on the dosage, and were different from controls. Methods for evaluating CNS depression are not described and results are described qualitatively.	Reproductive/Developmental: High, Immune/Hematological: High, Hepatic/Liver: High, Mortality: High, Nutritional/Metabolic: High, Renal/Kidney: High, Lung/Respiratory: High, Neurological/Behavioral: Medium	Muralidhara et al. 2001 644914
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1,1-Dichloroethane - Short-term (>1-30 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines. The study cites FREE, H. M., and FREE, A. H. (1961). Micro-urinalysis in small animals. Proc. Intern. Congr. Biochem. 5th, Moscow, 1961 p.520. Macmillan (Pergamon), New York. Mouse; Swiss - [mouse]; Male	intraperitoneal 3 days/week 5 days Injected 3 times every other day.	POD: 2400 mg/kg/day (LOAEL, renal) 0, 2ml/kg	The density of 1,1-dichloroethane is 1.2 g/ml. Doses were converted using the following formula: density (g/ml) * ml/kg administered = mg/kg. 1200 mg/ml * 2 ml/kg = 2400 mg/kg. The POD corresponds to a TWA of 1,440 mg/kg/day. Male Swiss mice (5/group) were administered 2 ml/kg of 1,1-dichloroethane (2400 mg/kg) intraperitoneally every other day for 3 times. 48 hours after last injection, urine was analyzed (via Combistix test strip) and kidney histology was evaluated. Urine analysis was not reported. Greater than 50% of the proximal tubules were swollen in 3/5 exposed mice. Proximal convoluted tubules did not show signs of necrosis.	Only one dose studied. Negative controls were not run concurrently.	Renal/Kidney: Uninformative	Plaa and Larson 1965 64411
No guideline was reported Rat; Sprague-Dawley - [rat]; Female	Inhalation: Vapor 7 hours/day 10 days 10 days exposure in non-pregnant animals.	POD: 16,000 mg/m3 (NOAEL, liver)(3800 ppm) 0, 3800, 6000 ppm (in air, water, or food)	Concurrently with a developmental toxicity study, nonpregnant female rats were exposed to 1,1-dichloroethane 7 hours/day for 10 days. In an initial experiment, animals were exposed to 0 and 3800 ppm; in a second experiment, animals were exposed to 0 or 6000 ppm. Liver endpoints evaluated included SPGT/ALT activity, liver weights, and gross pathology. Increased relative liver weight relative to (pooled) controls was reported at 6000 ppm. The POD in mg/m3 was calculated using a MW of 98.96 g/mol for 1,1-dichloroethane (3800 ppm = 15,539 mg/m3 rounded to 16,000 mg/m3).	The two experiments were not conducted at the same time (unknown time in between); control data from the two experiments were pooled.	Hepatic/Liver: Medium	Schwetz et al. 1974 62395

* Overall Quality Determination

1,1-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None Rat; Osborne-Mendel - [rat]; Male	Oral: Gavage 5 days/week 7 weeks Promotion protocol	POD: Evidence of tumor promotion was observed at 700 mg/kg/day 0, 700 mg/kg-bw/day	Rats that had been subjected to partial hepatectomies were administered a single tumor initiating dose of diethylnitrosamine (or water) via i.p. injection. Six days later, animals began receiving 1,1-DCE at 700 mg/kg/day for 5 days/week for 7 weeks. One week later, the experiment was terminated and livers were examined histopathologically for GGT-positive foci. A significant increase in foci was observed in animals that received 1,1-DCE in conjunction with diethylnitrosamine, but not in animals that received 1,1-DCE without diethylnitrosamine. No effects were observed on body weight, body weight gain, or absolute or relative liver weights in either group.	The primary purpose of this study was to evaluate the tumor initiation and promotion potential of the chemical. Effects on body and liver weights were not the primary purpose of the study, and only minimal details are provided for these endpoints. The absence of effects on body and liver weights is implied but not explicitly stated.	Cancer/Carcinogenesis: High	Milman et al. 1988 200479
No guideline was specified, but the study was conducted in a manner similar or equivalent to OECD TG 423; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Male	Oral: Gavage 5 days/week 13 weeks Animals were administered a single dose daily (5 times/week) for 13 weeks. Animals in the 4000 mg/kg bw group were sacrificed at 11 weeks due to high mortality.	POD: 500 mg/kg/day (NOAEL, kidney) 0, 500, 1000, 2000, 4000 mg/kg-bw/day	Male Sprague-Dawley rats (15/dose) were administered the test substance 5 days/week for 13 weeks by oral gavage. 1/15 animals died in the 2000 mg/kg bw dose group and 8/15 animals died in the 4000 mg/kg bw dose group, which resulted in early termination of the highest dose group at 11 weeks. Clinical signs included narcosis and CNS depression. Body weight gain was significantly reduced at 2000 mg/kg bw. ACP was elevated in the 2000 and 4000 mg/kg bw groups at 6 weeks, and ACP and NAG were elevated in the 1000, 2000, and 4000 mg/kg bw groups at 8 weeks. "No other anomalies were evident other than an apparent decrease in the 20g/kg NAG value at 6 weeks, a relatively high ACP control value at 12 weeks, and unusually low ACP excretion." No effects were observed on SDH, OCT, BUN, urinary protein, glucose excretion. No histopathological or organ weight effects on the liver were observed. Histopathological effects on the kidney were observed, but the levels of nephropathy were abnormally high in the control group (7/10 animals). Pulmonary inflammation was observed in controls and treated animals. No histopathological effects on the brain, adrenal, spleen, testis, epididymis and stomach were observed. Cytochrome P450 experiments were also performed. A NOAEL of 500 mg/kg/day was identified based on kidney effects.	The dosage volume varied for the treatment groups and controls. High mortality at the highest dose group could impact evaluation of results at that level. In the subchronic study, mild nephropathy was found in 70% of controls and mild pulmonary inflammation was found in 20% of controls. Methods for evaluating CNS depression are not described and results are only described qualitatively.	Reproductive/Developmental: High, Gastrointestinal: High, Immune/Hematological: High, Hepatic/Liver: High, Mortality: High, Nutritional/Metabolic: High, Renal/Kidney: High, Lung/Respiratory: High, Neurological/Behavioral: Medium	Muralidhara et al. 2001 644914

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1,1-Dichloroethane - Subchronic (>30-91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors do not state the use of any compliance methods. Mouse; B6C3F1 - [mouse]; Both	Oral: Gavage 5 days/week 6 weeks 5d/wk for 6 weeks followed by 2 week observation	POD: 3160 mg/kg/day (NOAEL; decreased survival) 0, 1000, 1780, 3160, 5620, 10000 mg/kg-bw/day	In a study designed to determine the maximum tolerated dosages of 1,1-dichloroethane, B6C3F1 mice (5/sex/group) were administered the test substance at doses of 0, 1000, 1780, 3160, 5620, and 10,000 mg/kg via oral gavage in corn oil for 5 days/week for 6 weeks. An additional 2 week observation period was included to detect delayed toxicity. Endpoints evaluated include survival and body weight. No mean body weight changes were reported in mice of either sex at any dose. Two male and three female mice died at 5620 mg/kg-d. Survival results for mice at 10,000 mg/kg were not reported. Based on these results, study authors selected 1800 mg/kg-day as the initial high dosage levels for the chronic study for males and females. Study authors do not identify a NOAEL or LOAEL. A NOAEL of 3160 mg/kg based on decreased survival at 5620 mg/kg is proposed, however, the dose dependency of this effect is unclear due to limitations in how results were reported.	Only evaluated body weight and survival, few methodological details provided.	Nutritional/Metabolic: High, Mortality: Uninformative	NCI 1978 646679
The authors do not state the use of any compliance methods. Rat; Osborne-Mendel - [rat]; Both	Oral: Gavage 5 days/week 6 weeks 5d/wk for 6 weeks followed by 2 week observation	POD: 562 mg/kg/day (LOAEL, decreased body weight) 0, 562, 1000, 1780, 3160, 5620 mg/kg-bw/day	In a study designed to determine the maximum tolerated dosages of 1,1-dichloroethane, Osborne-Mendel Rats (5/sex/group) were administered the test substance at doses of 0, 562, 1000, 1780, 3160, 5620 mg/kg via oral gavage in corn oil for 5 days/week for 6 weeks. An additional 2 week observation period was included to detect delayed toxicity. Endpoints evaluated include survival and body weight. Body weight was decreased by 16% and 29% in males at 562 and 1000 mg/kg, respectively. However, based on the information reported it is unclear how bodyweight was impacted at higher dose levels for male rats. At 3160 mg/kg/day, 2 females died. In females, body weight was reduced 20% at 1780 and 3160 mg/kg. Based on these results, study authors selected 700 and 1500 mg/kg-day as the initial high dosage levels for the chronic study for males and females, respectively. However, study authors do not identify a NOAEL or LOAEL. A LOAEL of 562 mg/kg is proposed based on a 16% decreased body weight in male rats; however, the dose dependency of this effect is unclear due to limitations with how the data was reported.	Only evaluated body weight and survival, few methodological details provided.	Nutritional/Metabolic: High, Mortality: Uninformative	NCI 1978 646679

* Overall Quality Determination

1,1-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 6 hours/day 5 days/week 26 weeks Control animals were exposed to 0 ppm for 26 weeks; the 1,1-DCA-exposed group was exposed to 500 ppm for 13 weeks followed by 1000 ppm for 13 weeks	POD: 3040 mg/m3 (NOAEL; liver, kidney) (750 ppm) 0, 500, 1000 ppm (in air, water, or food)	Sprague-Dawley rats (5/sex/group) were exposed to 1,1-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 13 weeks. After 13 weeks, treated rats were exposed to 1000 ppm for an additional 13 weeks (control animals were exposed to 0 ppm for an additional 13 weeks). The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No treatment-related effects on these parameters were reported. The NOAEL was 750 ppm; which was the time-weighted average exposure concentration over 26 weeks exposure. This value was converted to 3040 mg/m3 based on a molecular weight for 1,1-DCA of 98.96 g/mol (actual value = 3035.58 mg/m3, which was rounded to 3040 mg/m3).	The study report noted that the analytical concentration corresponding to 1000 ppm was 1150 ppm, but the analytical concentration corresponding to 500 ppm was not provided. The study was an English translation of a German study. The same group of animals was exposed to 500 ppm followed by 1000 ppm. The highest concentration was not sufficient to elicit effects on the measured parameters. Some study details were missing and/or not ideal (including but not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) one concentration was tested at a time and no effects were observed at the highest tested concentration; d) animal husbandry conditions were largely not reported; e) fewer numbers of animals were used than are typically used in rodent studies of this duration; f) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); g) data reporting/analysis was not comprehensive (negative results reported briefly in text; limited graphical data for some endpoints, no statistical analyses).	Hepatic/Liver: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626

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1,1-Dichloroethane - Chronic (>91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rabbit; Bunte; Both	Inhalation: Vapor 6 hours/day 5 days/week 26 weeks Control animals were exposed to 0 ppm for 26 weeks; the 1,1-DCA-exposed group was exposed to 500 ppm for 13 weeks followed by 1000 ppm for 13 weeks	POD: 3040 mg/m3 (NOAEL; liver, kidney) (750 ppm) 0, 500, 1000 ppm (in air, water, or food)	Bunte rabbits (2/sex/group) were exposed to 1,1-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 13 weeks. After 13 weeks, treated rabbits were exposed to 1000 ppm for an additional 13 weeks (control animals were exposed to 0 ppm for an additional 13 weeks). The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No treatment-related effects on these parameters were reported. The NOAEL was 750 ppm; which was the time-weighted average exposure concentration over 26 weeks exposure. This value was converted to 3040 mg/m3 based on a molecular weight for 1,1-DCA of 98.96 g/mol (actual value = 3035.58 mg/m3, which was rounded to 3040 mg/m3).	The study report noted that the analytical concentration corresponding to 1000 ppm was 1150 ppm, but the analytical concentration corresponding to 500 ppm was not provided. The study was an English translation of a German study. The same group of animals was exposed to 500 ppm followed by 1000 ppm. The highest concentration was not sufficient to elicit effects on the measured parameters. Some study details were missing and/or not ideal (including but not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) one concentration was tested at a time and no effects were observed at the highest tested concentration; d) animal husbandry conditions were largely not reported; e) fewer numbers of animals were used than are typically used in rodent studies of this duration; f) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); g) data reporting/analysis was not comprehensive (negative results reported briefly in text; limited graphical data for some endpoints, no statistical analyses).	Hepatic/Liver: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626

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1,1-Dichloroethane - Chronic (>91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Guinea pig; Pirbright-White; Both	Inhalation: Vapor 6 hours/day 5 days/week 26 weeks Control animals were exposed to 0 ppm for 26 weeks; the 1,1-DCA-exposed group was exposed to 500 ppm for 13 weeks followed by 1000 ppm for 13 weeks.	POD: 3040 mg/m3 (NOAEL; liver, kidney) (750 ppm) 0, 500, 1000 ppm (in air, water, or food)	Pirbright-White guinea pigs (5/sex/group) were exposed to 1,1-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 13 weeks. After 13 weeks, treated guinea pigs were exposed to 1000 ppm for an additional 13 weeks (control animals were exposed to 0 ppm for an additional 13 weeks). The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (liver weight and liver histology), and renal effects (kidney weight and kidney histology). No treatment-related effects on these parameters were reported. The NOAEL was 750 ppm; which was the time-weighted average exposure concentration over 26 weeks exposure. This value was converted to 3040 mg/m3 based on a molecular weight for 1,1-DCA of 98.96 g/mol (actual value = 3035.58 mg/m3, which was rounded to 3040 mg/m3).	The study report noted that the analytical concentration corresponding to 1000 ppm was 1150 ppm, but the analytical concentration corresponding to 500 ppm was not provided. The study was an English translation of a German study. The same group of animals was exposed to 500 ppm followed by 1000 ppm. The highest concentration was not sufficient to elicit effects on the measured parameters. Some study details were missing and/or not ideal (including but not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) one concentration was tested at a time and no effects were observed at the highest tested concentration; d) animal husbandry conditions were largely not reported; e) fewer numbers of animals were used than are typically used in rodent studies of this duration; f) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); g) data reporting/analysis was not comprehensive (negative results reported briefly in text, no quantitative data provided, no statistical analyses).	Hepatic/Liver: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626

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1,1-Dichloroethane - Chronic (>91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/ Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Cat; Not specified; Both	Inhalation: Vapor 6 hours/day 5 days/week 26 weeks Control animals were exposed to 0 ppm for 26 weeks; the 1,1-DCA-exposed group was exposed to 500 ppm for 13 weeks followed by 1000 ppm for 13 weeks.	POD: Uninformative - not suitable for POD determination 0, 500, 1000 ppm (in air, water, or food)	See footnotes for full summary ¹	The study report noted that the analytical concentration corresponding to 1000 ppm was 1150 ppm, but the analytical concentration corresponding to 500 ppm was not provided. The study was an English translation of a German study. The same group of animals was exposed to 500 ppm followed by 1000 ppm. Some study details were missing and/or not ideal (including but not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) one concentration was tested at a time; d) animal husbandry conditions were largely not reported; e) few numbers of animals were used per group; f) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); g) data reporting/analysis was not comprehensive (negative results reported briefly in text, no quantitative data provided, no statistical analyses). An intercurrent infection starting in week 11 confounded the interpretation of the study results; it was not possible to distinguish between effects caused by the 1,1-DCA exposure and those caused by infection. In addition, effects on clinical pathology related to kidney function were largely attributed to one cat (sex not specified) that was removed from the study prematurely owing to poor general condition after 23 weeks. The incidence of kidney histology effects in controls was not explicitly specified.	Hepatic/Liver: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626

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1,1-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study did not follow any guidelines or compliance conditions. This form is for 1,1-DCE Mouse; B6C3F1 - [mouse]; Male	Oral: Drinking water 52 weeks Animals had access to water ad libitum	POD: Uninformative - not suitable for POD determination 0, 0.835, 2.5 mg chemical/mL water	In a chronic duration study evaluating tumorigenicity and tumor-promotion potential, groups of 30-day old B6C3F1 hybrid male mice (35/group) were administered test substance concentrations of 0.835 and 2.5mg/mL of drinking water, continuously for 52 weeks. To assess tumor promotion, treatment of the test substance began following a 4-week treatment with the tumor initiator DENA (10mg/L). Interim sacrifices of 10 animals/group occurred at 24 weeks. Negative controls included water only and initiator only groups. Phenobarbital, known to induce liver tumors was included as a positive control, both with and without initiation. The study included limited endpoints: mortality, body weights, water intake, and reporting of tumors in the liver and lungs. The tumorigenicity results (both with and without initiation) were negative. These results were considered surprising as previous studies with the compound via gavage were positive; however, the gavage study was reported to be a 5-fold higher dose than the drinking water study. Reporting details for other endpoints were limited, mean body weights for all treated mice were reported to parallel those of control mice, but "were lower". No significant body weight changes were noted (only positive results for other compounds tested was indicated). Patterns of water intake were reported to parallel body weights; however, statistical comparisons were only made against other treatment groups, rather than to controls.	The study duration was not acceptable for a standard cancer bioassay; therefore no determinations can be made based on the negative results observed in the non-initiated groups. The duration was considered acceptable for a tumor-promotion study, however, the sensitivity of the study was reduced because the tumor initiator induced tumors in nearly 100% of the animals at 52 weeks; therefore, the ability of the test substance to cause increased incidences at this time point could not be evaluated. Instead, data were limited to only looking at the number of tumors/mouse between groups. The reporting of positive control results were questionable. Although the study reported increased incidences of liver tumors, a Fisher's Exact test (either one or two-tailed) using incidence data provided do not show significance. Limitations in data reporting, specifically the reporting of growth and water intake data from controls on separate graphs from the experimental groups makes independent evaluations and determinations of significance difficult.	Cancer/Carcinogenesis: Uninformative	Klaunig et al. 1986 200427
Non-guideline, non-GLP study. Rat; Not specified; Unknown	Inhalation: Vapor 4 hours/day 7 days/week 24 weeks Animals were exposed for 4 hrs/day for 6 months.	POD: Not suitable for POD determination. 0.01, 0.05 mg chemical / L air	See footnotes for full summary ²	The lack of details on exposure methods, test animals, animals per group, use of controls, and results reporting deficiencies make this study unusable.	Neurological/Behavioral: Uninformative	nan 18135

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1,1-Dichloroethane - Chronic (>91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study pre-dates all guideline and GLP compliance practices Rat; Albino; Both	Inhalation: Vapor 7 hours/day 3.5 days/week 24 weeks 75 days Animals were exposed 7hrs/day on alternate days for 6 months (75 exposures total). An additional group of animals added after exposure day 30 to replace animals that died received 45 exposures.	POD: Uninformative - not suitable for POD determination 0, 1067 ppm (in air, water, or food)	A single group of albino rats (12/sex) were exposed, whole body, to test substance vapor concentrations of 1000 ppm (1067 analytical) for 7hrs/day on alternate days over a span of 6 months. An air-only control group was included. Due to a significant number of mortalities caused by lung infections, replacement rats of roughly the same age were added to the study (numbers not specified); these rats were exposed for up to 45 days. Endpoints evaluated included mortality, body weight gain, body length, hematology, limited serum chemistry/icterus index, relative liver and kidney weights, liver fat analysis, and gross and microscopic examinations. As stated by the study authors "endemic lung infection of the rat colony minimizes the value of the results produced by this study." In addition, for some endpoints (e.g., liver fat analysis, samples from replacement rats exposed for 45 days and those surviving 75 days were inadvertently pooled, and the data were not considered reliable. NOAEL and LOAEL values for rats were not reported. No conclusions can be made due to poor animal health that severely impacted the study results.	This study is considered to be unacceptable for several reasons; major limitations include: 1). Lung infections were identified in rats from all groups, resulting in a high mortality rate including in the control group (57%). As recognized by the study authors, the resulting data are unusable due to the potential influence of poor health on all outcomes. 2). As animals died, attempts were made to replace them, however, the specifics (number of replacement animals used) were poorly described. Additionally, data from replacement animals (which received a maximum of 45 exposures) were included in the weight curves as if they had started with the original group which further makes results impossible to interpret. However, individual animal data is available at the end of the study.	Lung/Respiratory: Medium, Mortality: Uninformative	Mellon Institute of Industrial Research 1947 1973131

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1,1-Dichloroethane - Chronic (>91 days)

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study predates guideline and GLP compliance practices Dog; Mongrel; Male	Inhalation: Vapor 7 hours/day 3.5 days/week 24 weeks 75 days Animals were exposed 7 hrs/day on alternate days over a period of 6 months (75 exposures total)	POD: Uninformative - not suitable for POD determination 0, 1067 ppm (in air, water, or food)	A single male mongrel dog was exposed, whole body, to a test substance target vapor concentration of 1000 ppm (1067 ppm analytical), 7 hrs/day on alternate days over a period of 6 months (75 exposures total). An air-only control dog was included. Animal weight gain was monitored. Other endpoints included hematology, serum parameters (serum phosphatase, BUN), liver functional tests (many of which were poorly described) including the thymolbarbital turbidity test, bromosulfalein retention, and gross and microscopic examinations on a limited number of tissues. It is unclear if relative liver and kidney weights were measured for dogs, no data were provided, and these organ weights were not mentioned in the results section of the text. The dog exposed to 1,1-Dichloroethane gained 1.31 kg throughout the study compared to a 3.66 kg gain in the control dog. Some haematological parameters were altered, compared with the previous measurement throughout the study; overall the study authors reported blood counts to be essentially normal. The exposed dog was reported to have marked congestion of the lungs, but no other pathology. The authors noted that "the single animal exposed to each vapor makes it unwise to base any definite conclusions on their response," and the study was "not recommended for publication." NOAEL and LOAEL values were not determined.	This study had a number of limitations; these include: the use of mongrel (mixed-breed) dogs, use of a single animal/group and a single exposure group, and the lack of details (e.g, methods, animal husbandry). The study authors acknowledge that few conclusions can be made due to the small number of animals used.	Cardiovascular: Low, Immune/Hematological: Medium, Lung/Respiratory: Medium, Hepatic/Liver: Uninformative, Mortality: Uninformative, Nutritional/Metabolic: Uninformative, Endocrine: Uninformative	Mellon Institute of Industrial Research 1947 1973131

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1,1-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors do not state the use of any compliance methods. Rat; Osborne-Mendel - [rat]; Both	Oral: Gavage 5 days/week 78 weeks Doses changes throughout the study period. TWA doses were 0, 382, 764 mg/kg/day for males and 0, 475, 950 mg/kg/d for females. There were also several weeks when rats were not treated during the 78 week exposure window.	POD: N/A - Study not suitable for identifying a POD 0, 382, 475, 764, 950 mg/kg-bw/day	See footnotes for full summary ³	Very low survival and high incidence of pneumonia was observed in control and treated animals	Can- cer/Carcinogenesis: High, Im- mune/Hematological: High, Hep- atic/Liver: High, Mortality: High, Nutri- tional/Metabolic: High, Re- nal/Kidney: High, Lung/Respiratory: High, Skin/Connective Tissue: High, Neurologi- cal/Behavioral: Uninformative, Cardiovascular: Uninformative, Thyroid: Un- informative, Reproduc- tive/Developmental: Uninformative, Gastrointestinal: Uninformative	NCI 1978 646679
The authors do not state the use of any compliance methods. Mouse; B6C3F1 - [mouse]; Both	Oral: Gavage 5 days/week 78 weeks TWA doses were 0, 1442, 2885 mg/kg/day in male mice and 0, 1665, 3331 mg/kg/d in female mice	POD: 1665 mg/kg/day (NOAEL, based on reduced survival and in- creased incidence of endometrial stromal polyps) 0, 1442, 1665, 2885, 3331 mg/kg-bw/day	See footnotes for full summary ⁴	Fewer than recommended animals included in the control group (N = 20). Low survival for males in control and treatment groups. Low toxicity was apparent early in the experiment, which led study authors to increase the administered doses on 1 occasion for males and 3 occasions for females. However, TWAs are provided.	Can- cer/Carcinogenesis: High, Hep- atic/Liver: High, Mortal- ity: High, Nutri- tional/Metabolic: High, Reproduc- tive/Developmental: Uninformative	NCI 1978 646679

* Overall Quality Determination

¹ 1937626: Cats (2/sex/group) were exposed to 1,1-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 13 weeks. After 13 weeks, treated cats were exposed to 1000 ppm for an additional 13 weeks (control animals were exposed to 0 ppm for an additional 13 weeks). The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No treatment-related effects were reported on mortality, hematology, or liver parameters. In cats, reduced body weight gain, and increased BUN and serum creatinine were reported (after the concentration was increased to 1000 ppm). Histological examination of the kidneys after 26 weeks exposure showed renal tubular dilation and degeneration in 3 of 4 cats. The study noted that weight loss during the 11th week of the study was due to an intercurrent catarrhal infection. The extent of this infection and the number of affected animals was not reported (both control animals and exposed animals appeared to be affected). It was not possible to determine if effects observed in the study were due to infection or 1,1-DCA exposure. Although no mortality occurred, the study authors noted that one cat was removed from the study prematurely owing to poor condition after 23 weeks exposure. It appears that clinical pathology data for this animal were included with the data for the other 3 exposed cats. Increased BUN and creatinine in exposed cats was attributed largely to that particular cat. The number of control cats that showed kidney histology was not explicitly stated. The time-weighted average exposure concentration over 26 weeks exposure was 750 ppm. This value was converted to 3040 mg/m³ based on a molecular weight for 1,1-DCA of 98.96 g/mol (actual value = 3035.58 mg/m³, which was rounded to 3040 mg/m³). Although effects were observed at this concentration, study limitations preclude the identification of an effect level in cats.

- ² 18135: In a non-guideline study, White rats (number and strain not specified) were exposed to dichloroethane (purity not reported) vapors at 0.05 and 0.01 mg/L for 4hrs/day for 6 months. No additional exposure details were provided. An untreated control group was not included; however, based on the study text, it is presumed that baseline measurements were used as a comparator, although this was not explicitly stated. No outcome assessment methods were provided. Based on the reported results, endpoints evaluated included clinical signs and evaluations of conditioned reflexes including latent period, and motor reactions to noise and light. Conditioned reflexes were also monitored for at least a three-month recovery period after exposure ended. The cerebral cortex of animals was examined for morphological changes to assess interneuronal connections. The timing and methods of examination were not reported. No quantitative results were provided. Animals purportedly showed no visible clinical signs of toxicity. Animals exposed to 0.05 mg/L showed “an increase in the latent period, attenuation of the motor reaction to noise and light, decreased reflexes, differentiation disorders, and signs of compensating and paradoxical phases.” Effects were less pronounced and occurred later (after 3 months) in animals exposed to 0.01 mg/L. Once exposure ended, recovery from conditioned reflex changes began within 7-10 days in the 0.01 mg/L group and after 3 months in the 0.05 mg/L group. Morphological changes in the interneuronal connections in the cerebral cortex, including changes in the protoplasmic processes in the nerve cells, were observed in both exposure groups. Reversal occurred with a return to normal conditioned reflexes. The authors reported the 0.01 mg/L to be close to the liminal concentration. The study is insufficient for POD determination.
- ³ 646679: Osborne-Mendel rats were administered 1,1-dichloroethane for up to 78 weeks via oral gavage. Two control groups were included (untreated and vehicle (corn oil) treated; N=20/sex/group), as well as a low (TWA doses = 382 mg/kg-d for males and 475 mg/kg-d for females; N=50/sex) and high dose groups (TWA = 764 and 950 mg/kg-d for males and females, respectively; N = 50/sex). Due to changes in the observed toxicity of the test substance throughout the study, the high and low doses had to be adjusted on several occasions. Furthermore, during week 32 of the study intubation had to be ceased for 1 week, followed of 4 weeks of treatment. This cyclic pattern of dosing continued until week 78. A 33 week observation period was included once dosing was stopped. Measured outcomes included body weight gain, survival, clinical observations, food consumption, gross and microscopic examination of all major tissues, organs, and gross lesions taken from sacrificed animals or animals found dead. Other parameters such as hematology, clinical chemistry, and organ weight were not measured. Survival was poor in all treatment groups for both sexes (survival in untreated, vehicle, low, high dose groups = 30, 5, 4, 8%, respectively, in males; 40, 20, 16, 18%, respectively, in females). Study authors concluded that the high early mortality in rats appeared to be related to a high incidence of pneumonia. Histology revealed a high incidence of chronic murine pneumonia in 80% of rats in the bioassay, with incidence similar across the control, low, and high dose groups of both sexes. Dose-related increases in mammary adenocarcinomas and in hemangiosarcomas were observed in female rats, however, the incidence was not statistically significant in either the low or high dose groups compared to the matched vehicle control or a pooled vehicle control. Overall study authors concluded that under the conditions of the bioassay there was no conclusive evidence for the carcinogenicity of the test substance, but note that due to the high degree of early mortality the assay may not have been able to detect tumor types that characteristically appear late in life. Study authors did not identify a POD. Due to the high incidence of chronic murine pneumonia and low rates of survival in control and 1,1-dichloroethane treated animals, it is not recommended that this study be used for identifying a POD.
- ⁴ 646679: B6C3F1 mice were administered 1,1-dichloroethane for 78 weeks via oral gavage. Two control groups were included (untreated and vehicle (corn oil) treated; N=20/sex/group), as well as a low (TWA doses = 1442 mg/kg-d for males and 1665 mg/kg-d for females; N=50/sex) and high dose groups (TWA = 2885 and 3331 mg/kg-d for males and females, respectively; N = 50/sex). Due to the observed lack of toxicity, low and high doses were increased twice for males during the first 10 weeks of the study and on 3 occasions for females during the first 21 weeks of the study. A 13 week observation period was included once dosing was stopped. Measured outcomes included body weight gain, survival, clinical observations, food consumption, gross and microscopic examination of all major tissues, organs, and gross lesions taken from sacrificed animals or animals found dead. Other parameters such as hematology, clinical chemistry, and organ weight were not measured. Survival was 35, 55, 62, and 32% in male mice and 80, 80, 80, and 50% in female mice of the untreated control, vehicle. Survival was significantly reduced in high dose male and female mice. No effect on body weight was observed in any treatment group for either sex. Incidence of non-neoplastic lesions were low and similar across control and treated groups of both sexes. Hepatocellular carcinoma was the most commonly observed neoplasm in male mice, occurring in 2/17 untreated controls, 1/19 vehicle controls, 8/49 low dose males, and 8/47 high dose males. However, the incidence of this neoplasm did not show a statistically significant dose-response relationship by Cochran-Armitage test and pair-wise comparisons to the vehicle and pooled vehicle controls were not statistically significant. In female mice, there was a statistically significant dose-response relationship for the incidence of endometrial stromal polyps (benign neoplasms) of the uterus, and the incidence of this neoplasm was significantly increased in high dose females (4/46) compared to the pooled vehicle controls (0/79), but not the non-pooled vehicle controls (0/20). Study authors concluded that some of the findings were indicative of the possible carcinogenic potential of the test substance, however, the bioassay does not provide conclusive evidence for carcinogenicity. Study authors did not identify a POD. For males, the NOAEL is 1442 mg/kg-d based on reduced survival in the high dose group. For females, the NOAEL is 1665 mg/kg-d based on reduced survival and increased incidence of endometrial stromal polyps in high dose females. A study wide NOAEL of 1665 mg/kg/day is proposed.

1,1-Dichloroethane - Reproductive/Developmental						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline was reported Rat; Sprague-Dawley - [rat]; Female	Inhalation: Vapor 7 hours/day 10 days Exposed on GDs 6-15.	POD: 16,000 mg/m³ (LOAEL, body weight and food consumption) (3800 ppm) 0, 3800, 6000 ppm (in air, water, or food) F0 - gestation, 15-Jun	Rats were exposed to 1,1-dichloroethane 7 hours/day on GDs 6-15. In an initial experiment, animals were exposed to 0 or 3800 ppm; in a second experiment, animals were exposed to 0 or 6000 ppm. Decreased food consumption and body weights relative to (pooled) controls were reported at both concentrations, without effect on liver parameters (SGPT/ALT activity, liver weight, gross pathology), litter parameters, fetal body measurements, or the incidence of gross or soft tissue anomalies. An increased incidence of delayed ossification of sternabrae was reported by the authors at 6000 ppm. The POD in mg/m ³ was calculated using a MW of 98.96 g/mol for 1,1-dichloroethane (3800 ppm = 15,539 mg/m ³ rounded to 16,000 mg/m ³).	Limitations of the study include: 1) the two experiments were conducted separately with an unknown amount of time between them; 2) the controls were pooled for all endpoints except one (which showed a difference among control groups); and 3) the incidence of a specific skeletal variation was high in one of the control groups (>60% of litters affected). SGPT/ALT activity was not determined in animals exposed at 6000 ppm.	Nutritional/Metabolic: High, Reproductive/Developmental: Medium, Hepatic/Liver: Medium	Schwetz et al. 1974 62395
No guideline was reported Rat; Non-pedigreed; Female	Inhalation: Vapor 4 hours/day 6 days/week Animals were exposed 6 days/week during the 4 weeks (and presumably the 6 days) prior to gestation. The study indicated that animals were exposed during the "entire pregnancy" (presumably daily).	POD: 15 mg/m³ (LOAEL, estrous cycle effects, preimplantation loss, and embryonic mortality) 0, 15 mg/m ³ F0- pre mating, 4 months, F0- mating, 6 days, F0 - gestation, until GD 17-19	The study exposed rats for 4 months to evaluate systemic and other effects (mortality, body weights, immunological, neurological, muscular, liver) and effects on the estrous cycle and reproductive organ pathology. Rats were subsequently mated and half of the pregnant animals were exposed during gestation (to evaluate whether developmental effects were the result of exposure before or during pregnancy). Another experiment evaluated ADME (not included in this evaluation; supplemental). The study author reported changes in estrous cyclicity (lengthened estrous) and no other "systemic" effects (mortality, body weight, immune function, liver, reproductive organ pathology) in the animals treated for 4 months prior to pregnancy. In rats treated during pregnancy, embryonic mortality increased and there was increased preimplantation loss, again in the absence of observable systemic effects.	The methods of exposure were not reported. There were few details on methods/outcome assessment. Non-pedigreed animals were used; numbers of animals/per group and animals evaluated per endpoint. Statistical analyses were not described. Results were reported for only a few endpoints for which statistical significance was achieved. Translation of a foreign language study.	Reproductive/Developmental: Uninformative	Vozovaya 1977 62623

* Overall Quality Determination

Isomer: Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None reported Rat; Wistar - [rat]; Male	Injection (subcutaneous) Test substance was administered as a single subcutaneous injection. The dose was reported to be 0.75% of the LD50, however, the exact administered dose was not reported.	POD: NA	Male Wistar rats (groups of 9-11) were administered a single dose of dichloroethane (isomer not reported) at 0 or 0.75 LD50 (actual dose was not reported) via subcutaneous injection. Evaluated endpoints included measurement of delayed-type hypersensitivity reactions and immune cell activity. Decreased DTH reactions (measured as % change in hind paw weight) were observed in test substance-treated animals compared to controls. Exposed animals also had decreased T cell-mediated immune reactions in the spleen, including decreased acetylcholinesterase (ACE) activity in T cells, decreased antibody-producing cells (APC), and decreased percentage of esterase-positive cells. No NOAEL or LOAEL was reported. Due to deficiencies in dose reporting, a NOAEL or LOAEL could not be identified.	The exact dose of administered test substance was not reported. The administered test substance was reported to be dichloroethane, however, the isomer was not reported.	Im-mune/Hematological: Uninformative	Zabrodski et al. 1776866

* Overall Quality Determination

Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
no guideline Rat; Not specified; Unknown	Oral: Diet 5-7 weeks Animal diet provided 2x daily for 1h in the day and 2h at night.	POD: 170 mg/kg/d (1600 ppm) (LOAEL, liver fat content) 0, 300, 600, 1600 ppm (in air, water, or food)	In a preliminary study, rats (6/group) were administered the test substance in the diet at doses of 0, 300, or 600 (0, 32, or 64 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d) for 5 weeks or 0, or 1600 ppm (corresponding to 0 and 170 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d) for 7 weeks. Endpoints evaluated include liver weight and fat content. Fat content was increased at 1600 ppm.	Only one dose was provided through week 7 (300 and 600 only through week 5). The study was done in 2 separate trials.	Hepatic/Liver: Medium	Alumot et al. 1976 194588
None. Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 4 hours Whole body inhalation chamber	POD: 3440 mg/m3 (NOAEL, hepatic) 0, 618, 850, 1056, 1304 ppm (in air, water, or food)	1,2-Dichloroethane: mw= 98.96 g/mol POD was determined using the following formula: (ppm * mw)/24.45 = mg/m3; (850 ppm * 98.96 g/mol)/24.45 = 3440 mg/m3 Male Sprague-Dawley rats (8/group) were exposed 0, 618, 850, 1056 or 1304 ppm (0, 2527, 3475, 4318, 5332 mg/m3, respectively) of 1,2-dichloroethane via whole body inhalation for 4 hours. Rats were sacrificed 24 hours after exposure. Endpoints evaluated included serum glutamate dehydrogenase (GLDH), AST (GOT), ALT (GPT) and sorbitol dehydrogenase (SDH) activities. Significant increases in serum GLDH and SDH levels were seen at ≥850 ppm (3475 mg/m3) which was the author reported "...minimally active concentration." Serum ALT and AST were significantly increased at 850 ppm (3475 mg/m3) only and not at higher concentrations.	Liver histopathology and organ weight were not assessed. Respiration rate was not reported for o-DCB which is known to be a respiratory irritant. Individual animal data was not reported.	Hepatic/Liver: Medium	Brondeau et al. 1983 200247
The text indicated that the study was performed in accordance with the procedure described in the "Code of Federal Regulations (Part 191.1, Chap. 1, Title 21) for evaluating highly toxic substances." The study pre-dates the enactment of GLP practices. Rat; Sprague-Dawley - [rat]; Male	Oral: Gavage 1 days Single dose via gavage	POD: 794 mg/kg (rat LD50) 464, 1000, 1250, 4040mg/kg	In an acute oral toxicity study groups of male Sprague-Dawley rats (5/dose) were dosed with 1,2-dichloroethane, via gavage, at doses of 464, 1,000, 1,250, and 4,040 mg/kg. Animals were observed for 14 days and were subjected to necropsies upon death or at the end of the observation period. Mortalities occurred in 0/5, 4/5, 5/5, and 5/5 animals in the 464, 1,000, 1,250, and 4,040 mg/kg groups, respectively. Depression and ataxia were observed at 1,000 mg/kg. Extreme depression occurred in the two highest dose groups. There were no signs of toxicity at 464 mg/kg. No gross pathologies were observed. The LD50 was 794 mg/kg (584-108 mg/kg).	No specific methods were given for the determination of depression and ataxia	Neurological/Behavioral, Mortality: Medium	Stauffer Chemical Company 1973 6569955

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The text indicated that the study was performed in accordance with the procedure described in the "Code of Federal Regulations (Part 191.1, Chap. 1, Title 21) for evaluating highly toxic substances." The study pre-dates the enactment of GLP practices. Rabbit; New Zealand White - [rabbit]; Unknown	Instillation into the eye single dose Single instillation into one eye	POD: Negative for eye irritation in rabbits 10mg/kg	0.1mL (or 10 mg) of the test substance was instilled into one eye each of six New Zealand rabbits. The other eyes served as controls. Eyes were scored for irritation at 24-, 48-, and 72-hours following treatment. The method of scoring was not specified. Irritation scores were not provided. Two test animals exhibited slight redness, and one animal showed signs of slight chemosis; the time-points of these observations were not reported. Complete remission occurred within 2-3 days for animals with chemosis and redness; for other animals, complete remission occurred within 48 hours. Neither mean nor individual irritation scores were provided. The study authors reported the test substance as a non-irritant. Attempts to find any details of scoring in the cited guideline were unsuccessful as the part 191 is marked as [Reserved] in 21 Code of Federal Regulations.	Irritation scores were not provided.	Irritation: Medium	Stauffer Chemical Company 1973 6569955
The test was done according to "the proposed FDA revision of the test for primary skin irritants published in the Federal Register 37: No. 244, December 19, 1972, and the proposed DOT changes in the Federal Register 38: No. 28, February 12, 1973. The study pre-dates the enactment of GLP practices. Rabbit; New Zealand White - [rabbit]; Unknown	Dermal single dose A dose was not clearly reported.	POD: Negative for skin irritation in rabbits	In a skin irritation test, Rabbits (n=6, strain and sex not specified) were dermally exposed to unmoistened solid test material (dose not reported) for 4 hours. The conditions of exposure (e.g., occluded or non-occluded) were not reported but the skin was intact. However, there is no dose specified in the guideline that was cited. According to that guideline at the time, the instructions only specified "Liquid test materials (0.5 milliliter) and/or solid or semisolid test materials (0.5 gram) are introduced under a 1.5 by 1.5 inch 12-ply gauze patch which is secured in place by two H x 4 inch strips of adhesive tape in the form of an X." Skin was scored using the Draize method after 4, 24, and 48 hours after treatment. Animals were retained until 96 hours after treatment for observation. Two sites on each rabbit were tested. At each time point, erythema and edema scores were zero for 12 sites. The primary irritation score was zero. The test material was not irritating or corrosive to the skin.	The dose applied was not reported.	Irritation: Medium	Stauffer Chemical Company 1973 6569955

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None specified Rat; Sprague-Dawley - [rat]; Female	Oral: Gavage Single dose Exposed after fasting for 16 hours	POD: 628 mg/kg (LOAEL, clinical chemistry, liver) 0, 628 mg/kg-bw/day	Sprague-Dawley rats (10 females) were administered a single dose of 1,2-dichloroethane (1,2-DCE) at 628 mg/kg in mineral oil, or mineral oil alone (control group), by gavage. Endpoints included serum activities of alanine aminotransferase (ALT), aspartate aminotransferase (AST), and lactate dehydrogenase; and histological examination, as well as mechanistic endpoints, including malondialdehyde (MDA) concentration (measure of liver lipid peroxidation) in liver homogenates and concentration of dolichol in liver homogenates, cytosol, microsomes, and Golgi fractions. Treatment-related effects included increased serum activities of ALT, AST, and lactate dehydrogenase were increased in test substance-exposed animals compared to controls. Histological examination showed moderate steatosis in test substance-exposed animals. Test substance-related changes in mechanistic endpoints included increased MDA in liver homogenates and decreased concentrations of dolichol in liver fractions (homogenate, cytosol, microsomes, and Golgi fractions) in test substance-exposed animals compared to controls. The LOAEL was 628 mg/kg based on increased activities of serum enzymes and liver histopathology at the only dose tested.	Only one dose was tested and effects were observed at this dose (no NOAEL observed).	Hepatic/Liver: Medium	Cottalasso et al. 2002 200279
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study did not reference any guidelines or compliance methods. Rat; Wistar - [rat]; Male	Oral: Gavage Single dose Dosing is not entirely clear. The report indicates Animals were administered, via gavage, "single doses of DCE (ul/100 g bw) as a solution 50% v/v in mineral oil." It is unclear if the ul/100 g bw refers to DCE alone, or the 50% test solution.	POD: Not determined 0, 12.5, 25, 50, 75ul/100 g bw	In an acute mechanistic study aimed at evaluating whether impairment of glycoprotein synthesis, maturation, and secretion may be involved in the pathogenesis of liver injury induced by DCE, groups of male Wistar rats (presumed 4-6/group) were administered 0, 12.5, 25, 50, and 75 ul/100 g body weight of DCE as a solution 50% v/v in mineral oil. It is unclear whether controls were untreated or vehicle controls. Animals were sacrificed 5, 15, 30, and 60 minutes post-dosing, depending on the outcome evaluated. Endpoints included measurements of liver weights, hepatic protein, serum AST and ALT, liver TG and total dolichol. Levels of dolichol were also measured in liver homogenate, cytosol, microsomes, and in various Golgi fractions. Finally, UDP-galactose, N-acetylglycosamine, galactosyltransferase, and lactose sialyltransferase activity in various Golgi apparatus fractions were measured at each time of sacrifice. No effects on liver weights, under the conditions of the experiment, were observed. At 60 min post-exposure, dose-related increases in serum AST and ALT were observed, reaching significance in the 50 ul/100g bw group. There was no Author reported NOAEL or LOAEL values. Given the uncertainty on dosing, a suggested POD was not determined for this study.	The ambiguity of dosing is the largest concern for this study. The study is designed as a mechanistic study, therefore, the timing of sacrifice and endpoints evaluated do not follow those included in a typical acute toxicity study.	Hepatic/Liver: Medium	Cottalasso et al. 1995 200280
No guideline given other than that the study was a bone marrow micronucleus assay in mice. Mouse; Crl: CD1 (ICR) BR; Both	i.p. single dose i.p. method of administration	POD: Negative 188, 376 mg/kg-bw/day	In a mouse bone marrow micronucleus test, Crl: CD-1 (ICR) BR mice (5/sex) were administered a single dose of 1,2-dichloroethane at doses of 0 (vehicle), 188, 376 mg/kg bd wt. Animals were sacrificed at 24- and 48-hours after treatment. Positive controls (colchicine and mitomycin C) were also tested and showed appropriate results. Bone marrow cells (1000-2000 polychromatic erythrocytes per animal) were scored for the presence of micronuclei. PCE/NCE ratios were calculated by counting 1000 PCE/animal. All treated animals showed signs of acute clinical toxicity, but did not show depression of bone marrow proliferation. There was no statistically significant increase the number of micronucleated PCEs or decreased PCE/NCE ration, compared to controls, at either time point. 1,2-dichloroethane was negative in the mouse bone marrow micronucleus test.	No indication of guideline methodology	Genotoxicity: High	Crebelli et al. 1999 194679

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
EEC Guideline B.1; OECD Guideline 401 Mouse; Crl: CD1 (ICR) BR; Both	i.p. single dose Only a range of doses was reported (188-376 mg/kg bd wt)	POD: LD50 = 470 mg/kg bd wt 188, 376 mg/kg-bw/day	In an acute i.p. toxicity study, Crl: CD-1 (ICR) BR mice (5/sex) were administered a single dose of 1,2-dichloroethane at doses of 188-376 mg/kg bd wt. Mice were examined 24- and 48-hours post exposure. LD50 = 470 mg/kg bd wt. Observed clinical signs included piloerection, hypoactivity, hunched posture, and sedation.	This study was a preliminary toxicity study that was used to determine experimental doses for an in vivo mouse bone marrow micronucleus test. Reporting on methods were limited. Doses were reported as a range. It is unclear how many doses were tested. LD50s are for combined males and females. The incidence of any mortalities and clinical signs were not reported. Method used to derive the LD50 were not reported.	Mortality: Low, Clinical signs: Uninformative	Crebelli et al. 1999 194679

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
All phases of this study were conducted in compliance with the following Good Laboratory Practice Standards: European Community (EC) – European Parliament and Council Directive 2004/10/EC (O.J. No. L 50/44, 20/02/2004) Organisation for Economic Co-Operation and Development (OECD) – OECD Series on Principles of Good Laboratory Practice and Compliance Monitoring, Number 1. OECD Principles on Good Laboratory Practice (as revised in 1997) ENV/MC/CHEM(98) 17 US Environmental Protection Agency – TSCA GLPs Title 40 CFR, Part 792 - Toxic Substances Control Act (TSCA); Good Laboratory Practice Standards, Final Rule. Exception: The purity and structure of the test material was determined concurrently with the study. Rat; Fischer 344 - [rat]; Both	Inhalation: Vapor 4 hours/day 1 days Animals were exposed for 4 hours	POD: 1904 ppm (NOAEL, nutritional/metabolic) 1904 ppm (in air, water, or food)	This study was conducted to determine the acute inhalation toxicological properties of ethylene dichloride. Groups of five rats/sex were whole-body exposed for four hours to a time-weighted average chamber concentration of 1904 ppm (7706 mg/m ³) ethylene dichloride. All animals survived the four-hour exposure to the test material as well as the two-week post-exposure period. Time of peak effect observations noted post-exposure included lacrimation, decreased activity, palpebral closure, incoordination, and decreased response to touch. All animals appeared normal at the three hour post-exposure observation. In-life observations noted post-exposure included decreases in resistance to removal, activity, reactivity, and fecal amount; as well as perioral and/or perinasal soiling. All rats appeared normal by test day 4. Mean body weight losses of 5.7 and 9.6% were noted for male and female rats, respectively, on test day 2. Pre-exposure mean body weight values were exceeded on test day 8. There were no visible treatment-related lesions noted in any of the rats exposed to ethylene dichloride at the test day 15-scheduled necropsy.	The major limitations of this study are the use of a single dose and the lack of controls. Since no effects on mortality or body weight (<10%) were observed, adding controls may not have added to the study, but it is possible that the observed clinical signs could be attributed to the exposure method rather than the chemical itself.	Neurological/Behavioral, Gastrointestinal, Mortality, Nutritional/Metabolic: High	Dow Chemical 2005 10699112

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
EEC European Economic Community. Methods for the Determination of Toxicity and other Health Effects. Official Journal of the European Union, Part B2. Acute Toxicity (Inhalation), May 30, 2008.OECD Organisation for Economic Co-operation and Development, Guidelines for Testing of Chemicals, Section 4-Health Effects, Paris. Guideline Number 403 (2009).USEPA Environmental Protection Agency. Office of Prevention, Pesticides, and Toxic Substances, 870 Series Final Guidelines: Health Effect Test Guidelines, OPPTS 870.1300, Acute Inhalation Toxicity (1998). Rat; Fischer 344/DuCrj - [rat]; Both	Inhalation: Vapor 4 hours/day 1 days Single 4-hour exposure	POD: 2,404 ppm (LC50 for males and female, calculated) 2520 ppm (in air, water, or food)	See footnotes for full summary ¹	This study lacks a control group due to the primary intent of determining an LC50; however, it is impossible to determine if there were confounding factors that led to altered clinical signs and mortality, such as disease or distress.	Mortality: High	Dow Chemicals 2017 10699356

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study followed a step-up, step-down procedure citing Deichmann WB and LeBlanc TJ. Determination of the approximatelethal dose with about six animals. J Bul Hyg Toxicol 1943;25:415417. The study was GLP compliant. Rat; Sprague-Dawley - [rat]; Unknown	Intratracheal injection 1 days Animals were administered single intratracheal injections.	POD: 120 mg/kg (ALD - acute lethal dose) 0, 6.8, 68, 119, 213mg/kg	Sprague Dawley rats underwent surgery to implant a tracheal cannula. Rats with cannulas in place were administered 1,2-dichloroethane by injection, and air was used to force the test material into the trachea. Experiments were performed in single animals using a step-up or step-down method. Single animals were dosed with 1, 10, 17.5, and 31.3% of the oral LD50 of 680 mg/kg (equivalent to 6.8, 68, 119, 213 mg/kg). Control animals underwent the same surgery and were injected with saline at 0, 1 (0.89 mL/kg) and 2 (1.77 mL/kg) times the maximal volume of the test substance. Each rat was observed for 3-days for mortality before the next rat was dosed. Complete necropsies were performed after the 3-day observation period and on animals that died. Animals died when dosed with ≥ 119 mg/kg; in general, death occurred within 10 seconds. Minor to moderate lesions were observed in anteroventral lobes in controls, similar to the lesions observed in treated animals. Rats dosed with 6.8, 68, and 119 mg/kg showed moderate changes primarily in the hilus of the lung lobes. Moderate changes were defined as those involving 1/4 to 1/2 of the parenchyma and characterized by rose to dark-red areas, slight pulmonary edema, and fluid or froth noted in the trachea. The animal that died in the 213 mg/kg group exhibited minor changes throughout all lobes, presumably due to the shorter (unspecified) time of survival. The acute lethal dose (ALD) was determined to be 120 mg/kg.	A non-standard route of exposure was used.	Mortality, Lung/Respiratory: Medium	Dow Chemical 1989 2799602
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No compliance methods were specified. Cattle; Not specified; Unknown	Dermal Single dose	POD: Positive for skin irritation 0, 10cm ³	Cattle (sex, strain, and number/group not specified) were treated with the test substance on the shaved skin of the mid-dorsal line from the shoulder back to the hind legs at a dose of 10 cc (10 cm ³) per exposure site. Approximately 3 to 4 inches of hair was left between strips. For exposures, the test substance was applied with a 10 cc syringe in 10 cc dosages to the exposed hide. At least one control strip was applied on each animal. Based on observations at 5 days, 8 days, and 14 days, the treatment was rated as excellent (no damage), good (no damage could be felt with the hands but one could see that the hide had been treated), fair (the test substance damaged the hide but would be acceptable), or bad (the hide was damaged to an extent that was not acceptable; this rating was given when extreme cracking or sloughing of the hide was observed, whereas a fair rating was given when this occurred to a lesser degree). For the 5-, 8-, and 14-day observation timepoints, the test substance was rated as bad, bad, and fair, respectively.	Test substance purity was not reported. Although a concurrent negative control was reported, details of treatment of the negative control group were inadequately described. Limited or no details were reported for the animals used in the study, husbandry conditions, and dosing methods.	Skin/Connective Tissue, Irritation: Low	Dow Chemical, 1962 5447286
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Inhalation: Vapor 6 hours/day 1 days Rats were exposed up to 6 hours. Interim sacrifices were made at 1- and 3-hours during exposure.	POD: 818 mg/m³ (202 ppm; LOAEL for mechanistic; decrease in liver GSH) 0, 202 ppm (in air, water, or food)	Based on the molecular weight of 1,2-dichloroethane (98.96 g/mol). A concentration of 202 ppm would be equivalent to 818 mg/m ³ . Male Fisher 344 rats were exposed to 0 or 202 ppm of 1,2-dichloroethane up to 6 hours via nose-only inhalation. Control rats were sacrificed before exposure (time 0) and after 6-hour exposure to air (6 hour) (n=3/time point). Exposed rats were sacrificed 1, 3 and 6 hours after exposure began and 2 hours after exposure ended (3/time point). Body weights were assessed at the time of sacrifice. Lungs, liver and kidney were collected to determine GSH levels in these tissues. No significant difference in body weights were seen compared to time 0 control or to 6-hour air control. Liver GSH levels decreased during exposure (1, 3, and 6 hours). Two hours after exposure ended, liver GSH levels returned to control levels. Kidney and lung GSH levels were minimally affected by exposure. A LOAEL of 202 ppm based on mechanistic data; decrease in liver GSH levels. A NOAEL of 202 ppm was determined for body weight changes.	No major limitation.	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Oral: Gavage single dose	POD: 150 mg/kg/day (LOAEL for mechanistic; decrease in liver GSH) 0, 150 mg/kg-bw/day	Male Fisher 344 rats were administered 0 or 150 mg/kg/day of 1,2-dichloroethane in corn oil via oral gavage. Control animals were sacrificed prior to dosing and 8 hours post-dosing (3/timepoint). Exposed animals were sacrificed 0.5, 1, 2 and 8 hours after dosing. Body weights were assessed at time of sacrifice. Liver, lungs, and kidneys were collected to evaluated levels of glutathione. No significant difference in body weights were seen compared to control animals. Liver GSH levels gradually decrease with time on all and was still evident at 8-hours post dosing (35-50% of controls). Kidney and lung GSH levels were minimally affected by exposure. A LOAEL of 150 mg/kg/day for mechanistic effects (lower hepatic GSH) and a NOAEL of 150 mg/kg/day for body weight changes were determined.	No major limitation.	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Oral: Gavage single dose	POD: 43 mg/kg/day (LOAEL for decrease GSH) 0, 43 mg/kg-bw/day	Male Fisher 344 rats were administered 0 or 43 mg/kg/day of 1,2-dichloroethane in water via oral gavage once. Control animals were sacrificed prior to dosing and 8 hours post-dosing (n=3/timepoint). Exposed animals were sacrificed 0.5, 1, 2 and 8 hours after dosing (n=3/timepoint). Body weights were measured at time of sacrifice. Liver, lungs, and kidneys were collected to evaluated levels of glutathione.No significant differences in body weights were seen when compared to body weights of controls sacrificed prior to dosing or 8 hours after receiving the vehicle. Liver GSH levels decreased after dosing but returned to control levels 8 hours after dosing. Slight decline in kidney GSH levels on hour after dosing and returned to control levels two hours after dosing. Lung GSH levels were slightly decreased one and two hours after dosing and returned to control levels by 8 hours post-dosing. A LOAEL of 43 mg/kg/day for mechanistic changes (decreased GSH) was determined. A NOAEL of 43 mg/kg/day was determined for body weight.	No major limitation.	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study was conducted according to USEPA, 799.9135. The study was GLP compliant. Rat; F344/DUCRL; Both	Inhalation: Vapor 4 or 8 hours In one experiment, animals were exposed for 4 hours to 0, 200, 600, or 2,000 ppm. In a follow-up experiment with limited endpoints, animals were exposed for 8 hrs to 0, 50, 100, and 150 ppm.	POD: 202 mg/m3 (NOEL, injury to the olfactory mucosa) 0, 50, 100, 150, 200, 600 ppm (in air, water, or food)	See footnotes for full summary ²	Note: combined 4 hr and 8 hr acute exposures because the 8 hr exposure was done as a follow-on experiment to better fine-tune the nasal effects and the NOEL and LOEL values and, therefore, on its own, had limited endpoints. Both studies indicate a NOEL of 50 ppm for nasal effects. It is not clear why the exposure time was increased to 8 hrs. The text states for the 4-hr exposure, that "due to the number of animals and the experimental endpoints, the inhalation exposures were conducted on two consecutive days" and that "rats of both sexes were exposed to all 4 concentrations on each day." It is unclear if there were two complete sets of animals (2 sets of 5/sex/concentration), and if so, which endpoints were measured for each set. The 4-hr 50 ppm group was not consecutively exposed with the other 4-hour exposure groups.	Neurological/Behavioral: High, Hepatic/Liver: High, Nutritional/Metabolic: High, Renal/Kidney: High	Dow Chemical 2006 6570013
The study was conducted according to USEPA 799.9620 (2002) and OECD Guideline 424 (1997). The study was GLP compliant. Rat; F344/DUCRL; Both	Inhalation: Vapor 4 hours	POD: 809 mg/m3 (NOEL, functional neurologic changes) 0, 200, 600, 2000 ppm (in air, water, or food)	See footnotes for full summary ³	The study design and exposure schedule table (pg. 80/683) reports that subsets of animals were exposed over 4 separate days. Each set of n=20 "contained a counterbalanced number of rats/sex/dose." There is some ambiguity regarding the number of animals/sex/concentration that were concurrently exposed on a given day. It appears the animal data from the 4 different exposure days were combined to generate a single dataset.	Neurological/Behavioral: High, Nutritional/Metabolic: High	Dow Chemical 2006 6570013
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates use of OECD TG or GLP practices. Rabbit; Not specified; Unknown	Dermal 24 hours	POD: 2,800 mg/kg (LD50, dermal) 1260, 2520, 5000, 10000mg/kg	Undiluted 1,2-dichloroethane was applied to the skin of rabbits (5/group; strain and sex not specified) at doses of 1,260, 2,520, 5,000, and 10,000 mg/kg, under occlusive conditions, for 24 hours. Animals were assessed for mortality and for local effects to the skin. Deaths were observed in 0/5, 4/5, 3/5, and 4/5 animals in the 1,260, 2,520, 5,000, and 10,000 mg/kg groups, respectively. Localized effects included the appearance of burning at 1,260 mg/kg and irritation, edema, and necrosis that increased with severity at $\geq 2,520$ mg/kg. The dermal rabbit LD50 = 2,800 (CI 1,600-4,700) mg/kg.	The duration of animal observations was not specified. No irritation scores were provided; it is unknown if reversibility of the effects (in animals that survived) were assessed. The study did not include monitoring of body weights or gross and/or microscopic examinations which are included in the current OECD TG 402 for acute dermal toxicity. The doses exceed current recommendations for a limit test.	Irritation: Low, Mortality: Medium	Dow Chemical 1956 725343
Study predates OECD and GLP guidelines Mouse; Ha:ICR Swiss Mice; Female	Dermal Single Animals received a single application of the test material; 14 days later, animals were administered PMA 3 times/week for a duration not clearly specified (428-574 days); A PMA-only control group was included.	POD: No tumor promotion was observed 0, 126mg/application/mouse	This form is for 1,2-Dichloroethane: In a tumor initiator/promoter assay, 126 mg of the test substance in 0.2mL acetone was applied to the clipped dorsal skin of 30 female noninbred Ha:ICR Swiss mice under a ventilated hood. An unspecified positive control group was also included (no further details). No methods describing occlusion or measures taken to prevent volatilization were reported. After 14 days, 0.5ug of PMA in 0.2mL acetone per application/mouse was applied three times/week. Two additional groups of PMA only controls consisting of 120 mice given 2.5 mg/application/mouse and 90 mice given 5.0ug of PMA per application/mouse. The duration of PMA treatment (and observation) was not clearly specified. A duration range for a collection of test compounds was reported to be 428-576 days. Survival data for individual chemicals were not reported. Reported data included: days to first tumor, and the number of mice with papillomas/total papilloma. No other endpoints were evaluated. No significant increase in incidences of papillomas was observed, compared to PMA controls.	Major limitations include the failure to take measures to account for test substance volatility during application. Other limitations include: use of an untreated vs. vehicle only control; lack of clarity on study duration and whether there was consistency with controls; lack of reporting chemical-specific survival data; insufficient reporting of other study details (e.g., specifications of the positive control). This study was also limited in the scope of endpoints (including tumor types evaluated).	Cancer/Carcinogenesis: Uninformative	Van Duuren et al. 1979 94473

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study does not report which, if any compliance guidelines were adhered to, or if the study was conducted under GLP conditions. Mouse; CD-1 - [mouse]; Male	Inhalation: Vapor 4 hours	POD: 4089 mg/m³ (LOAEL, kidney) (1,000 ppm) 0, 1000, 1250, 1500 ppm (in air, water, or food)	Concentrations were converted using the formula: (ppm * mw)/24.2 = mg/m ³ ; (1000 ppm * 98.96 g/mol) /24.2 = 4,089 mg/m ³ Male CD-1 Swiss mice received an i.p injection of saline or corn oil prior to exposure to test substance (control for other experiments). Mice (10-15/group) were exposed to 0, 1000, 1250 or 1500 ppm (0, 4089, 5111 or 6134 mg/m ³) of 1,2-dichloroethane for 4 hours via a head-only inhalation. Mice were sacrificed 48 hours after termination of exposure. Endpoints evaluated included clinical signs of toxicity, mortality and liver and kidney weight and histology. A significant dose-dependent increase in mortality was seen at 24 and 48 hours post-exposure, however mortality of the negative control was not reported. Some mice showed signs of clinical toxicity (ataxia, tremors, seizures, labored breathing and cyanosis) (concentration these responses occurred at and data not shown). Relative kidney weights were significantly increased (24, 25 and 47%) at 1000, 1250 and 1500 ppm, respectively compared to control. Moderate renal tubular damage was seen at 1000 and 1250 ppm and increased in severity at 1500 ppm, however negative control data were not reported. Relative liver weights were significantly increased at 1500 ppm (13%) compared to control. General observational changes in liver histology were noted (e.g. hepatocyte swelling, swollen nuclei) but exposure group where these changes occurred was not reported.	Lack of data regarding the negative control group and histology of liver.	Hepatic/Liver, Mortality, Renal/Kidney: Medium	Francovitch et al. 1986 60771
None reported Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 12 hours/day 1 days/week 1 days Exposed in a static total enclosure chamber	POD: 5000 mg/m³ (LOAEL, neurological) 0, 5000, 10000, 20000 mg/m ³	SD rats were exposed by inhalation to 5000, 10,000 and 20,000 mg/m ³ 1,2-dichloroethane for 12 hours in a static chamber. Following exposure, rats were sacrificed immediately or after 2, 4, and 6 hours of observation (additional observation limited to 10,000 mg/m ³ group). Water content of the cerebral cortex and medulla, and quantities of four amino acid transmitters (Asp, Glu, Gly, GABA) in brain tissue were measured. Water content in cortex increased in a dose-dependent manner in all dose groups. Water content in the medulla was increased significantly only in the 20,000 mg/m ³ group. Aspartate, glutamate, and glycine content was increased significantly in all exposure groups, while GABA levels were unaffected by exposure to 1,2-dichloroethane.	Static exposure chamber. Evaluations limited to water content and neurotransmitter levels in brain.	Neurological/Behavioral: Uninformative	Guo and Niu 2003 200352

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline or adherence to GLP conditions was specified. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week Animals were exposed 7 hrs/day, 5 days/week for 12 months	POD: ~607 mg/m3 (NOAEC, no observed adverse effects) 0, 5, 10, 50, 150 ppm (in air, water, or food)	See footnotes for full summary ⁴	Limited endpoints were evaluated in a chronic study.	Im-mune/Hematological, Hepatic/Liver, Renal/Kidney: Medium	IRFMN 1978 5447364
N/A; 1943 study Rabbit; Not specified; Unknown	Oral: Gavage 1 days A single oral gavage dose was given; surviving animals were observed for at least 17 days	POD: 500 mg/kg/day (LOAEL, liver, kidney and heart) 500, 600, 800, 1000, 2000 mg/kg-bw/day	A single gavage dose of 2000 mg/kg/day produced muscle weakness, increased respiratory rate, pupillary dilation, pulmonary edema, congestion of gastric mucosa and mortality in the single tested rabbit, which died 12-14 hours post-exposure. The response to a dose of 1000 mg/kg produced similar effects as those observed at 2000 mg/kg-d, but were less severe. The single rabbit administered 1000 mg/kg test substance died 14-16 hours post-exposure. The rabbit administered 800 mg/kg showed no signs of muscle weakness, but appeared sensitive to external stimuli (not further described) and died 16-18 hours post exposure. No mortality was observed in the 500 and 600 mg/kg dose groups. A moderate loss of body weight (magnitude of loss not reported) was observed during the 9 days post-exposure in the 600 mg/kg group, however, body weight recovered. No loss of body weight was reported in the rabbit administered 500 mg/kg test substance. Study authors further reported that 1,2-DCE did not cause widespread vascular damage, but did cause "toxic damage to the specialized cells of the kidney, liver, and to a lesser extent, the heart." These changes were slight in the doses that caused death, but were more marked in the tissues of the rabbit dosed with 500 mg/kg, which was sacrificed 17-days post-exposure. Congestion of the gastric mucosa and pulmonary edema were observed only in the highest treatment group (2000 mg/kg). Study authors note that several effects reported in previous studies (i.e., fatty changes in the liver and clouding of the cornea) were not observed in the current study.	A single rabbit was used for each dose. Methods were not described. No information was provided on the vehicle used, gavage volume, timing of observations and necropsy, follow up time, or tissues examined at necropsy. Histopathology findings were not described in detail.	Neurological/Behavioral, Cardiovascular, Gastrointestinal, Hepatic/Liver, Mortality, Musculoskeletal, Nutritional/Metabolic, Ocular/Sensory, Renal/Kidney, Lung/Respiratory: Uninformative	Kettering Laboratory 1943 4528351

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
N/A; 1943 study Rabbit; Not specified; Unknown	Dermal single dose Study pdf is missing Table 3 which provided doses in mg/kg. Multiple applications of the test substance were made (unoccluded) until the desired dose was achieved; however, the study notes that most of the substance evaporated.	POD: Could not be determined due to missing data (Table 3 of the study pdf) mg/kg-bw/day	Test substance was applied to the abdominal skin (clipped) of rabbits in 5-ml aliquots every 5 minutes until the desired test concentration was achieved. Table 3, which provided the doses and mortality data, was missing from the pdf file, so the precise doses achieved in this study could not be determined. Study authors noted that much of the test substance evaporated and rabbits were kept under a hood to prevent inhalation exposure. No local irritant effects were reported for any exposure conditions. Transitory increases in reparatory rate were reported following each application of test substance. The study noted diarrhea, decreased weight gain and mortality in some rabbits; however, the exposure was expressed as total volume in the text.	The dermal applications were not occluded and evaporation of the test substance was noted. The number of applications differed among dose groups. The substance was applied in 5 mL volumes every 5 minutes until the desired dose was given. The missing data from Table 3 preclude an assessment of dose-response for the effects noted in the text.	Gastrointestinal, Mortality, Nutritional/Metabolic, Lung/Respiratory, Irritation: Uninformative	Kettering Laboratory 1943 4528351
No guideline was specified; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Female	Oral: Gavage 21 hours 1,2-dichloroethane was administered twice, 21 hours and 4 hours prior to sacrifice.	POD: 134 mg/kg (NOAEL, serum ALT) 0, 134mg/kg	Female Sprague-Dawley rats were exposed twice to 134 mg/kg of 1,2-dichloroethane (n=6) or corn oil (n=12) (21 hours and 4 hours prior to sacrifice) via gavage. Endpoints evaluated included mortality, serum ALT levels, hepatic ornithine decarboxylase activity and cytochrome P-450 content. No rats died during the study. Serum ALT levels were not different from control. No changes in hepatic ornithine decarboxylase activity or hepatic cytochrome P-450 content were seen compared to control.	The source and purity of test substance was not reported. Preparation and storage conditions were not provided. Given the volatility of the test substance, this information would be useful. Only one dose studied; the dose was chosen based on either LD50 or cancer bioassay. No effect on apical outcome was seen.	Hepatic/Liver: High	Kitchin et al. 1993 6118
No guideline was specified; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Female	Oral: Gavage 21 hours 1,2-dichloroethane was administered twice, 21 hours and 4 hours prior to sacrifice.	POD: 134 mg/kg (LOAEL, genotox) 0, 134mg/kg	In a in vivo genotox study, female Sprague-Dawley rats were exposed twice to 134 mg/kg of 1,2-dichloroethane (n=6) or corn oil (n=12) (21 hours and 4 hours prior to sacrifice) via gavage. Hepatic DNA damage was assessed by alkaline elution. Significant increases in the hepatic DNA damage (3-fold) was seen at 134 mg/kg compared to control.	The source and purity of test substance was not reported. Preparation and storage conditions were not provided. Given the volatility of the test substance, this information would be useful. Only one dose studied; the dose was chosen based on either LD50 or cancer bioassay. No effect on apical outcome was seen.	in vivo genotox: High	Kitchin et al. 1993 6118
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This was a non-guideline, non-GLP study. Guinea pig; Not specified; Unknown	Dermal 16 hours Animals were exposed for 15 minutes, or for 1, 4, or 16 hours.	POD: Uninformative, not suitable for POD determination 1mL	Guinea pigs were dermally exposed to 1,2-dichloroethane for 15 minutes or for 4 or 16 hours. Exposures were done by applying 1mL of the test material (neat) through a hole in the cover glass of presumably four separate glass ring chambers placed on the clipped-back skin of guinea pigs to minimize exposure via other routes. The hole was sealed after application. After each exposure period, a glass ring was removed and whole skin specimens were removed and fixed for histopathological analysis. Skin samples from non-exposed adjacent sites were taken as controls. No macroscopic skin changes were observed. There were no microscopic changes at the 14-minute and 1-hour time points. At 4 hours, slight karyopyknosis, perinuclear oedema (only in areas with pyknotic nuclei), spongiosis, and junctional separation were observed. Each of these observations was slightly more pronounced at the 16-hour collection point. No karyolysis or cellular infiltration in the dermis was observed. Based on the data available, exposure to the test material resulted in some skin pathology. Accurate dosing cannot be determined precluding the ability to identify a reliable toxicity value. Therefore, a POD was not determined.	Study only evaluated localized skin effects following dermal exposure. It is unclear whether accurate dosing can be estimated due to the limitations in the study details and whether or not a single animal received multiple exposures.	Skin/Connective Tissue: Uninformative	Kronevi et al 1981 58151

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non guideline study Rat; Sprague-Dawley - [rat]; Male	intraperitoneal Single dose	POD: 274 mg/kg/day (NOAEL, renal) 0, 2.5, 3.8, 5.1, 7.6mmol/kg	The molecular weight of 1,2-dichloroethane is 98.96 g/mol. 98.96 mg/mmol * 2.5 mmol/kg = 274.4 mg/kg. Apical POD: 274 mg/kg (NOAEL, renal) Mechanistic POD: 376 mg/kg (NOAEL, enzyme levels in urine) Male Sprague-Dawley rats (number of rats/group was not reported) were administered 0, 2.5, 3.8, 5.1 or 7.6 mmol/kg 1,2-dichloroethane (0, 274, 376, 505 or 752 mg/kg, respectively) in corn oil via intraperitoneal injection one time. Urine was collected from mice housed in polycarbonate metabolism cages continuously and recovered every 12 hours for a total of 96 hours. Urine was analyzed for volume, osmolality, and enzyme activity levels of lactate dehydrogenase (LDH), alkaline phosphatase (AP) and gamma-glutamyl transpeptidase (GGT). Urine flow was rate was significantly increased at 3.8 mmol/kg (12 and 24 hour), 5.1 mmol/kg at (48 and 60 hour) and 7.6 mmol/kg (96 hour) after treatment. Urine osmolality was significantly decreased at 7.6 mmol/kg at all timepoints from 24- 96 hours, at 2.5 mmol/kg only during the first 12 hours and at 3.8 mmol/kg for the first 24 hours, compared to control. LDH levels were significantly increased in a dose-related manner at 5.1 mmol/kg (24-72 hours) and 7.6 mmol/kg (24-96 hours). Excretion rate of GGT was significantly increased at various time points throughout the study in all groups except for the 7.6 mmol/kg. No change in AP activities were seen compared to control (data not shown).	Histopathological examination of liver and kidneys was not done.	Renal/Kidney: High	Livesey 1982 5540663

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non guideline study Rat; Long-Evans - [rat]; Male	intraperitoneal Single dose	POD: 673 mg/kg/day (NOAEL, renal) 0, 1.7, 3.4, 5.1, 6.8, 8.5mmol/kg	The molecular weight of 1,2-dichloroethane is 98.96 g/mol. 98.96 mg/mmol * 1.7 mmol/kg= 168.2 mg/kg. Male Long Evans rats (6-8/group) were administered 0, 1.7, 3.4, 5.1, 6.8 or 8.5 mmol/kg 1,2-dichloroethane (0, 168, 336, 505, 673 or 841 mg/kg, respectively) in corn oil via intraperitoneal injection one time. Blood was collected at 1 and 2 days after injection and at the time of sacrifice (day 3). Endpoints evaluated included serum urea, creatinine and ALT (GPT) levels. Serum ALT levels were not significantly increased over control, although there was high variability within the groups. Serum urea levels were significantly increased on day 2 and 3 days in the 8.5 mmol/kg group. Serum creatinine levels were elevated in animals that also had high serum urea, although differences in the means did not reach significance at any dose group compared to control.	Histopathological examination of liver and kidneys was not done.	Hepatic/Liver, Renal/Kidney: High	Livesey 1982 5540663
The authors did not report which, if any compliance guidelines were adhered to or if study was GLP compliant. Rat; Sprague-Dawley - [rat]; Male	intratracheal Single dose	POD: 120 mg/kg/day (LOAEL, mortality) 0, 7, 70, 120, 213mg/kg	In an acute toxicity study, male Sprague-Dawley rats (1/group) were administered 1,2-dichloroethane (0, 7, 70, 120 or 213 mg/kg) via intratracheal route. Controls included: 1) rats that underwent surgery, but no saline was injected, 2) rats that received 1x the volume of saline or 3) rats that received 2x the volume of saline administered to the test rats. Rats were observed for 3 days; any surviving rats were sacrificed on day 3. Endpoints evaluated included mortality, gross necropsy and lung histopathology. Rats dosed with 120 or 213 mg/kg died within the 3 day observational period. The approximate lethal dose (the lowest dose causing death within 3 days) was 120 mg/kg. No difference in lung pathology was seen compared to volume matched negative control (moderate lung pathology was seen in control). No gross lesion were found in other organs other than generalized visceral congestion, attributed to cardiovascular collapse (study does not provide details as to which doses these observations were made).	Authors only tested one animal/dose. Moderate lung pathology was seen in the volume matched control.	Mortality, Lung/Respiratory: Uninformative	McCarty et al. 1992 4309

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Rat; Not specified; Male	Oral: Gavage 1 days Animals were dosed with the test substance via single oral gavage	POD: 770 (660 to 889) mg/kg (LD50) 500, 630, 795, 1000mg/kg	Groups of male albino rats (10/dose) were administered the test substance in a corn oil vehicle orally as a single dose via a stomach tube. Doses administered were 500, 630, 795, and 1,000 mg/kg. Dose groups were not consistently tested on the same day (e.g., animals dosed with 500, 630, 795, and 1000 mg/kg were dosed on 12/2/47, 2/3/48, 2/3/48, and 2/24/48, respectively. Animals were observed for 14 days post-dosing for mortality, and clinical signs of toxicity. At sacrifice, body weights of surviving animals were recorded and organs were examined for gross pathology. Mortalities were 0/10, 3/10; 5/10, and 8/10 at 500, 630, 795, and 1,000 mg/kg, respectively. Most deaths occurred within 24hrs. An LD50 value was calculated by the method of Thompson; LD50 = 770 (660 to 889) mg/kg. Gross pathology was reported to be similar to observations in mice which included: congestion of the lungs, pale kidneys and livers and injection of blood vessels of the intestines; the dose groups and incidences were not reported. Doses were converted from g/kg to mg/kg.	Limited to no details were provided for the test substance, and animals used. The study was considered unacceptable due to the lack of consistency in exposure administration across groups. Dose volumes varied both within and across study groups.	Gastrointestinal, Hepatic/Liver, Mortality, Renal/Kidney, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1948 5447301

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Mouse; Not specified; Both	Oral: Gavage 1 days Animals were dosed with the test substance via single oral gavage	POD: 911 (870 to 953) mg/kg (LD50) 630, 795, 1000, 1260mg/kg	Groups of albino mice (10/dose, sex varied between groups) were administered the test substance in a corn oil vehicle orally as a single dose via a stomach tube. Doses administered were 630, 795, 1,000, and 1,260 mg/kg. Dose groups were not consistently tested on the same day (e.g., dosing across groups ranged across a two month time period). Additionally, animals within some dose groups were not consistently dosed on the same day (e.g., at 630 mg/kg, some animals were dosed on 12/16, 47, while other animals in the same group were dosed on 12/18/47). Animals were observed for 14 days post-dosing for mortality, and clinical signs of toxicity. At sacrifice, body weights of surviving animals were recorded and organs were examined for gross pathology. Mortalities were 0/10, 0/10; 9/10, and 10/10 at 630, 795, 1,000, and 1260 mg/kg, respectively. Most deaths occurred within 24hrs. An LD50 value was calculated by the method of Thompson; LD50 = 911 (870 to 953) mg/kg. Gross pathology reported included: congestion of the lungs, pale kidneys and livers and injection of blood vessels of the intestines; the dose groups and incidences were not provided. Doses were converted from g/kg to mg/kg.	Limited to no details were provided for the test substance, and animals used. The study was considered unacceptable due to the lack of consistency in exposure administration across groups. Dose volumes varied both within and across study groups.	Gastrointestinal, Hepatic/Liver, Mortality, Renal/Kidney, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1948 5447301
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Rabbit; Not specified; Male	Oral: Gavage 1 days Animals were dosed with the test substance via single oral gavage	POD: 910 (857 to 966) mg/kg (LD50) 795, 890, 1000, 1260mg/kg	Groups of male albino rabbits (3-10/dose) were administered the test substance as a 10% dispersion in 1% tergitol 7 orally as a single dose via a stomach tube. Doses administered were 795, 890, 1,000, and 1,260 mg/kg. Dose groups were not consistently tested on the same day (e.g., dosing across groups ranged across a two month time period). Additionally, animals within some dose groups were not consistently dosed on the same day. Animals were observed for 14 days post-dosing for mortality, and clinical signs of toxicity. At sacrifice, body weights of surviving animals were recorded and organs were examined for gross pathology. Mortalities were 0/6, 6/10; 7/10, and 3/3 at 795, 890, 1,000, and 1260 mg/kg, respectively. Most deaths occurred within 24hrs. An LD50 value was calculated by the method of probits; LD50 = 910 (857 to 966) mg/kg. Gross pathology reported included congestion of the stomach and intestine and an increased amount of blood-tinged peritoneal fluid. The text ambiguously suggests that the gross pathology mentioned for mice also applied to rabbits; this includes congestion of the lungs, pale kidneys and livers and injection of blood vessels of the intestines. The dose groups and incidences for clinical signs were not provided. Doses were converted from g/kg to mg/kg.	Limited to no details were provided for the test substance, and animals used. The study was considered unacceptable due to the lack of consistency in exposure administration across groups. Dose volumes varied both within and across study groups.	Gastrointestinal, Mortality: Uninformative	Mellon Institute of Industrial Research 1948 5447301
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Rat; Not specified; Both	Inhalation: Vapor 1 days/week Animals in the 200 ppm group were exposed to test substance vapors for 1 hr; groups of animals exposed to 2000 ppm were exposed for 1, 2, or 4 hrs.	POD: 818 mg/m³ (200 ppm); (LOAEL, mortality, gross liver pathology) 200, 2000 ppm (in air, water, or food)	One group of female albino rats (n=10) were exposed to a test substance vapor concentration of 200 ppm for 1hr (additional methods of exposure details not provided). Separate groups of rats were exposed to 2000 ppm for 1hr (n = 6, males only), 2hrs (n=6, 3/sex), or 4 hrs (n =12, 8 males and 3 females). The dates of exposure varied across exposure groups (e.g. animals exposed to 2,000 ppm for 1hr were exposed on 2/6/45 but the 2hr exposures occurred on 2/23/45). Additionally, in the 4-hr 2000 ppm group, 6 males were exposed on 2/2/45, and 3 females and 3 males were exposed on 2/21/45. Animals were observed for mortality, and at sacrifice, organs were grossly examined. Mortality occurred in 0/6, 2/6, and 12/12 animals exposed to 2000 ppm for 1, 2, and 4 hrs, respectively. The deaths observed occurred within 1-3 days following exposure. At 200 ppm, 1/10 animals died on day 10 after a 1-hr exposure. In the 2000 ppm, 4-hr exposure group, liver lesions (mottled liver and/or prominent ascini) and lung lesions (congestion and/or hemorrhage) were observed in 4/12 of the animals that died. In these same animals, an additional lesion with the notation "Kp" was also observed, but this was not defined in the key provided. No other pathologies were observed in animals exposed to 2000 ppm (any duration). Similar liver and lung lesions were observed in the animal in the 200 ppm group that died. Mottled liver was reported in a surviving animal sacrificed on day 14. No LC50 values were reported. The 200 ppm dose was converted to 818 mg/m ³ using a molecular weight of 98.96 g/mol	Limited to no details were provided for the test substance, and animals used. The methods of exposure (e.g., apparatus for vapor generation, a description of the chamber or if nose-only exposure was used). The study was considered unacceptable due to the lack of consistency in exposure administration both across and within groups.	Hepatic/Liver, Mortality, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1948 5447301

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Rabbit; Not specified; Male	Inhalation: Vapor 1 days/week Animals in the 200 ppm group were exposed to test substance vapors for 1 hr; groups of animals exposed to 2000 ppm were exposed for 1, 2, or 4 hrs.	POD: 818 mg/m3 (NOAEC, mortality) 200, 2000 ppm (in air, water, or food)	One group of male albino rabbits (n=10) were exposed to a test substance vapor concentration of 200 ppm for 1hr (additional methods of exposure details not provided). Separate groups of male rabbits (4/group) were exposed to 2000 ppm for 1, 2, or 4hrs. Exposures for each group was performed on different dates. Animals were observed for mortality, and at sacrifice, organs were grossly examined. Mortality occurred in 1/4, 1/4, and 4/4 animals exposed to 2000 ppm for 1, 2, and 4 hrs, respectively. The deaths observed occurred within 1 following exposure. At 200 ppm, 0/10 animals died. Gross pathology for individual animals was reported. At 2000 ppm, lung consolidation, congestion and or hemorrhage was observed in animals that died. No other pathologies were observed in survival animals from any group. The study author described the results of inhalation exposures as a variable. No LC50 values were reported. The exposure concentration of 200 ppm was converted to 818 mg/m3 using a molecular weight of 98.96 g/mol	Limited to no details were provided for the test substance, and animals used. The methods of exposure (e.g., apparatus for vapor generation, a description of the chamber or if nose-only exposure was used). There was a lack of consistency in timing across exposure groups.	Hepatic/Liver, Mortality, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1948 5447301

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study pre-dates guidelines and GLP conditions Mouse; Not specified; Female	Inhalation: Vapor 1 days/week Animals in the 200 ppm group were exposed to test substance vapors for 1 hr; groups of animals exposed to 2000 ppm were exposed for 1, 2, or 4 hrs.	POD: 818 mg/m³ (LOAEL, mortality, gross lesions in liver and lung) 200, 2000 ppm (in air, water, or food)	One group of female albino mice (n=10) were exposed to a test substance vapor concentration of 200 ppm for 1hr (additional methods of exposure details not provided). Separate groups of female mice (10/group) were exposed to 2000 ppm for 1, 2, or 4hrs. Exposures for each group was performed on different dates. Animals were observed for mortality, and at sacrifice, organs were grossly examined. Mortality occurred in 0/10, 6/10, and 9/10 animals exposed to 2000 ppm for 1, 2, and 4 hrs, respectively. The deaths observed occurred within 1-2 days following exposure. At 200 ppm, 4/10 animals died between 3 and 12 days after a 1-hr exposure. Gross pathology for individual animals was reported. At 2000 ppm, liver lesions (mottled liver) were observed in 5/10, 3/10, and 2/10 animals and lung lesions (congestion and or hemorrhage) occurred in 1/10, 6/10, and 9/10 animals exposed for 1, 2, and 4hrs, respectively. One animal in the 2000 ppm, 4-hr group also had an additional lesion with the notation "Kp" but this was not defined in the key provided. No other pathologies were observed in animals exposed to 2000 ppm (any duration). At 200 ppm, mottled liver was reported in two animals (including one surviving animal), and lung congestions also occurred in the animal that died. The study author described the results as variable. No LC50 values were reported. The exposure concentration of 200 ppm was converted to 818 mg/m ³ using a molecular weight of 98.96 g/mol	Limited to no details were provided for the test substance, and animals used. The methods of exposure (e.g., apparatus for vapor generation, a description of the chamber or if nose-only exposure was used). There was a lack of consistency in timing across exposure group.	Hepatic/Liver, Mortality, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1948 5447301
Study pre-dates guidelines and GLP conditions Rabbit; Not specified; Male	Dermal 24 hours/day 1 days The test substance (3.16, 3.98, 4.45, and 5.0 mL/kg) was applied to clipped skin of rabbits under a "vinylite" dam for 24hrs.	POD: >4,000 mg/kg (dermal LD50) 3.16, 3.98, 4.45, 5mL/kg bw	See footnotes for full summary ⁵	The dose volumes were considered to be excessive compared with a standard dermal study. The study was considered unacceptable due to the lack of consistency of exposure both with and between treatment groups.	Mortality, Nutritional/Metabolic: Uninformative	Mellon Institute of Industrial Research 1948 5447301

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None Rat; Osborne-Mendel - [rat]; Male	Oral: Gavage Single dose Initiation protocol	POD: No evidence of tumor initiation was observed at 100 mg/kg 0, 100 mg/kg-bw/day	Rats that had been subjected to partial hepatectomies were administered one gavage dose of 1,2-DCE at 100 mg/kg. After 5 days, animals were given either 7 weeks of phenobarbital-containing diet followed by 1 week of control diet or 8 weeks of control diet. At study termination, livers were examined histopathologically for GGT-positive foci. No increase in foci was observed in animals with or without phenobarbital. No effects were observed on body weight, body weight gain, or absolute or relative liver weights in either group.	The primary purpose of this study was to evaluate the tumor initiation and promotion potential of the chemical. Effects on body and liver weights were not the primary purpose of the study, and only minimal details are provided for these endpoints.	Cancer/Carcinogenesis: High	Milman et al. 1988 200479
Non-guideline study; not GLP compliant. Rat; Sprague-Dawley - [rat]; Male	Oral: Gavage Single dose Animals were administered a single oral gavage.	POD: 625 mg/kg (LOEL, increased relative liver weight, microosomal changes) 0, 625 mg/kg-bw/day	In a mechanistic study evaluating the effects of exposure on microsomal responses, Male Sprague-Dawley rats (3/group) were administered a dose of the test substance in mineral oil at 625 mg/kg, via gavage. Animals were sacrificed 1 or 18 hours after dosing. Control rats were used, but details (untreated vs. vehicle control) were not provided. Systemic endpoints were limited to mortality, body weights, and relative liver weights. Mechanistic endpoints included measurements of microsomal total protein, RNA content, phospholipids, and diene conjugates. Cytochrome P-450 content, NADPH cytochrome reductase, and cytochrome B5 content were also measured along with the relative content of fatty acids from lipid extracts. No mortality or loss of body weight was observed. Relative liver weights were reported to be elevated, compared with controls, but the data were not shown. The recovery of diene conjugates and concentration of cytochrome P450 were significantly lower in treated animals, relative to controls. There was a significant decrease in the percentage of palmitic (16:0) arachidonic (20:4) and docosahexanoic (22:6) acid and increases in linoleic (18:2) and oleic (18:1) acids. The authors indicated that the decrease in cytochrome P-450 may be associated with lipid peroxidation and decreased arachidonic acid may be a sequela to the peroxidation, or because of inhibition of its synthesis from linoleic acid. No toxicity values were reported by the study author. A LOEL of 625 mg/kg was determined based on increased relative liver weights and microosomal changes in male rats.	Limited systemic endpoints were examined in a mechanistic study. Quantitative data were not provided for systemic endpoints. Details of the negative control were not adequately reported.	Mortality: High, Hepatic/Liver: Medium, Nutritional/Metabolic: Medium	Moody et al 1981 18954

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study does not state which, if any compliance methods were followed. Mouse; Swiss OF1; Male	Oral: Gavage Once Animals were pretreated with periodate oxidized adenosine (ADOX), which increased the intracellular S-adenosyl-L-homocysteine (SAH) concentration by inhibiting the SAH hydrolase.	POD: 1000 mg/kg (NOAEL, kidney) 0, 1000, 15000 mg/kg-bw/day	Male Swiss OF1 mice (10/group) were given an i.p. injection of saline (control for another study) 30 minutes prior to administration of a single gavage of 0, 1000 or 1500 mg/kg of 1,2-dichloroethane in corn oil. Two series of experiments were performed (one experiment per dose), therefore each dose studied had its own control group. Mice were sacrificed 8 hours after dosing. Kidneys were collected and stained for alkaline phosphatase. Three hundred renal proximal tubules were examined and assessed for tubular damage based on staining. A significant increase in the percentage of damaged tubules was seen at 1500 mg/kg (7.66% vs 0.32% in control) but not at 1000 mg/kg (5.1% vs 1.8% in control). The study also looked at the effects of S-adenosylmethionine (SAM)-dependent thiol methylation on compound-related nephrotoxicity. The study reports compound-related nephrotoxicity did not significantly increase in presence of periodate oxidized adenosine (ADOX, an indirect methyltransferase inhibitor) therefore renal toxicity was probably independent of SAM-dependent thiolmethyltransferase activity.	The study does not state which, if any compliance methods were followed.	Renal/Kidney: High	Morel et al. 1999 4697223
non guideline Mouse; CD-1 - [mouse]; Both	Oral: Gavage Single dose Did not include doses as the information was not reported	POD: 413 mg/kg (LD50, female mortality; 489 mg/kg, male mortality) mg/kg	A single gavage dose (doses not reported) of 1,2 dichloroethane were administered resulting in an LD50 of 489 (424-552) mg/kg in males and 413 (337-499) mg/kg in females	Limited details reported	Mortality: Low	Munson et al. 1982 62637

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines. The study cites FREE, H. M., and FREE, A. H. (1961). Micro-urinalysis in small animals. Proc. Intern. Congr. Biochem. 5th, Moscow, 1961 p.520. Macmillan (Pergamon), New York. Mouse; Swiss - [mouse]; Male	intraperitoneal single dose	POD: 250 mg/kg (NOAEL, renal) 0, 0.075, 0.2, 0.4ml/kg	The density of 1,2-dichloroethane is 1.25 g/ml. POD was based on >50% of mice having protein and/or glucose in the urine. POD was determined by the following formula: density (g/ml) * ml/kg administered = mg/kg. 1250 mg/ml * 0.2 ml/kg = 250 mg/kg. Male Swiss mice (10/group) were administered 0.075, 0.2 or 0.4 ml/kg of 1,2-dichloroethane (94, 250 or 500 mg/kg, respectively) intraperitoneally once. 24 hours after injection mortality and urinary protein and glucose (via Combistix test strip) were evaluated. No deaths occurred at 0.075 or 0.2 mg/kg.; 1/9 mice died at 0.4 ml/kg. Increased urinary protein was seen at 0.075 ml/kg (1/10 mice), 0.2 ml/kg (3/10 mice) and at 0.4 ml/kg (5/9 mice). No increase in urinary glucose was seen at any dose.	Negative controls were not run concurrently.	Renal/Kidney: Uninformative	Plaa and Larson 1965 64411
"The experimental procedures were in compliance with the Guide for the Care and Use of Laboratory Animals that were approved by the China Animal Care and Use Committee." Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 12 hours/day 1 days	POD: 5,000 mg/m3 (LOAEL, neuro) 0, 2.5, 5, 10g/m3	See footnotes for full summary ⁶	The source and purity of the test substance were not reported.	Neurological/Behavioral, Mortality: Medium	Zhang et al. 2010 4492125

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
"The experimental procedures were in compliance with the Guide for the Care and Use of Laboratory Animals that were approved by the China Animal Care and Use Committee." Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 6 hours/day 1 days Rats were exposed for 0, 2, 4 or 6 hours.	POD: 5,000 mg/m3 (LOAEL, neuro) 0, 5g/m3	Male and Female Sprague-Dawley rats exposed to 0, or 5,000 mg/m3 1-2 dichloroethane via inhalation for 0, 2, 4 or 6 hours and then sacrificed. In a satellite study rats were treated with 5,000 mg/m3 for 12 hours. Endpoints evaluated included mortality and analysis of the brain (gross and histopathology, and at 6 hour timepoint transmission electron microscopy [TEM]). No rats died during treatment. Study reports gross and microscopic analysis showed edema in all brains treated with 1,2-dichloroethane, but does not provide specific details on the severity seen at the different timepoints (data not quantified or shown). Water content of cortex was significantly increased after 2 hours (4%), 4 hours (4%) and 6 hours (5%) compared to 0 hour. Histological, perineuronal and perivascular spaces changes were seen at 6 hours (representative photo shown, data not quantified) and were less severe than seen in the 12 hour satellite study. TEM evaluation showed signs edema after 6 hours of treatment that were less severe than that seen after 12 hours of treatment (data not shown; other timepoints not examined).	The source and purity of the test substance were not reported.	Neurological/Behavioral, Mortality: Medium	Zhang et al. 2010 4492125

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guidelines reported; methodologies for enzyme activity assays were cited. Rat; Wistar - [rat]; Male	Oral: Gavage 1 days single gavage dose	POD: 136 mg/kg (LOAEL, total number of cells in BALF and histological changes in lung) 0, 136 mg/kg-bw/day	Male Wistar rats were administered a single oral gavage dose of 0 (control) or 136 mg/kg and assessed for biochemical and histological changes in the lungs at 1, 5, 15, and 30 days following exposure. Apical outcomes included relative lung weight, BALF examinations, and lung histology. Mechanistic endpoints included lung homogenate investigations of SOD, CAT, and GP activities and NPSH and MDA content. Transitory effects on lung relative weight and biochemical parameters in BALF (AIP and acid phosphatase) and lung homogenate (SOD, CAT, GP, and MDA) were reported. There was a significantly increased total cell number in BALF on day 30. There were no significant effects on lactate dehydrogenase (LDH) levels or total protein content in BALF and no effect on NPSH content in lung homogenate at any time following exposure. Noninflammatory histological changes in the lung of treated rats included cyanosis (moderate on day 1, mild-moderate on day 5, and mild on day 15), interstitial edema (mild on days 1 and 5), vacuolar changes (moderate on day 1, mild-moderate on day 5), desquamative changes (mild on day 1, mild-moderate on day 5, moderate on day 15), atelectases (moderate on day 1, mild-moderate on day 5, mild on day 15), and proliferation of alveolar macrophages (mild on day 1, mild-moderate on days 5 and 30, moderate on day 15). Inflammatory histological changes (macrophage proliferation, mixed with small number of neutrophils and eosinophils) occurred in the peribronchial (mild degree on day 5, and mild-moderate on days 15 and 30), interstitial (mild-moderate on days 5 and 30, moderate on day 15), interbronchial (mild day 1, mild-moderate day 5).	It is unclear if there were any histological changes in control animals; method to determine degree of severity was not reported. The test material solution is described as 1,2-dichloroethane in oleum solution. This reviewer assumes that oleum solution refers to the use of sunflower oil as vehicle.	Lung/Respiratory: Medium	Salovsky et al. 2002 200568

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
<p>”This report has been reviewed by the Health Effects Research Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily”</p> <p>Mouse; CD-1 - [mouse]; Female</p>	<p>Inhalation: Vapor 3 hours 1h post final exposure, mice inhaled aerosolized streptococci or klebsiella</p>	<p>POD: 9.21 mg/m3 (2.3 ppm) (NOAEL in mice, immune: based on increased mortality from streptococcal infection and decreased bactericidal activity at 5 ppm) 0, 2.3, 5.4, 10.8 ppm (in air, water, or food)</p>	<p>Mice (140/group) were exposed to the test substance at doses of 0, 2.3, 5.4, or 10.8 ppm (measured) (corresponding to 9.21, 21.6, and 43.3 mg/m3; calculated using MW= 96.95) for 3h/day for 5 consecutive days. One hour after the final exposure, animals inhaled aerosolized streptococci and were observed for 14d or Klebsiella (aerosolized) and the percent of Klebsiella killed was evaluated. Alveolar macrophages cell counts and phagocytosis were evaluated and lymphocytes from lung associated lymphnodes were used for in vitro stimulation assay. After a single 3h exposure, mice exhibited increased mortality from streptococcal challenge at 5 and 10 ppm. No effect was observed at 2.3 ppm either after a single 3 h exposure or 3h/day for 5 days. A 3h exposure to 10 ppm showed decreased bactericidal activity. No effects were observed in cell counts from pulmonary lavage or phagocytic activity of alveolar macrophages. Increased leucine aminopeptidase (LAP) activity was observed after a 3h single exposure to 10.8 ppm.</p>	No major limitations	<p>Im- mune/Hematological: High</p>	<p>Sherwood et al. 1987 200590</p>
<p>”This report has been reviewed by the Health Effects Research Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily”</p> <p>Rat; Sprague-Dawley - [rat]; Male</p>	<p>Inhalation: Vapor 3 hours 1h post final exposure, rats inhaled aerosolized streptococci or klebsiella</p>	<p>POD: 801.2 mg/m3 (200 ppm) (NOAEL, in rats based on no immune effect at the highest dose) 0, 10, 20, 50, 100, 200 ppm (in air, water, or food)</p>	<p>Rats (number/group not reported) were exposed to the test substance at doses of 0, 10, 20, 50, 100 or 200 ppm (nominal) (corresponding to 40.1, 80.1, 200.3, 400.6, and 801.2 mg/m3; calculated using MW= 96.95) for 3h (once) or 5 hours/day, 5 days/week for 12 days. One hour after the final exposure, animals inhaled aerosolized streptococci and were observed for 14d or Klebsiella (aerosolized) and the percent of Klebsiella killed was evaluated. Alveolar macrophages cell counts and phagocytosis were evaluated and lymphocytes from lung associated lymphnodes were used for in vitro stimulation assay. No effects were observed on mortality, bactericidal activity, alveolar macrophage counts or enzyme activity or lymphocytes.</p>	No major limitations	<p>Im- mune/Hematological: High</p>	<p>Sherwood et al. 1987 200590</p>

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
"This report has been reviewed by the Health Effects Research Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily"	Inhalation: Vapor 5 hours 1h post final exposure, rats inhaled aerosolized streptococci or klebsiella	POD: 801.2 mg/m3 (200 ppm) (NOAEL, in rats based on no immune effect at the highest dose) 0, 10, 20, 50, 100, 200 ppm (in air, water, or food)	Rats (number/group not reported) were exposed to the test substance at doses of 0, 10, 20, 50, 100 or 200 ppm (nominal) (corresponding to 40.1, 80.1, 200.3, 400.6, and 801.2 mg/m3; calculated using MW= 96.95) for 5h. One hour after the final exposure, animals inhaled Klebsiella (aerosolized) and the percent of Klebsiella killed was evaluated. No effects were observed on bactericidal activity.	No major limitations	Im-mune/Hematological: High	Sherwood et al. 1987 200590
Rat; Sprague-Dawley - [rat]; Male						
The study pre-dates OECD guidelines and use of GLP practices.	Inhalation: Vapor single dose This acute study used a grid exposure system where varying concentrations and durations were used. The concentrations tested were: 1.2, 2.4, 3.2, 4.0, 6.1, 12.1, 48.6, and 81.0 (mg/L). The durations tested (in hours) were 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.1, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, and 8.0. Not all durations were evaluated for each concentration. Note: rats were also tested for repeated exposures, either short term or chronic at 100, 200 and 400 ppm.	POD: LD50 values: 0.53 hr = 49,071 mg/m3; 2.75hrs = 12,268 mg/m3; 7.20hrs = 4,089 mg/m3. The reported NOAELs were: 0.1hrs = 49,071mg/m3; 0.3hrs = 12,268mg/m3; and 1.5hrs = 4,089mg/m3 1.2, 2.4, 3.2, 4, 6.1, 12.1 mg chemical / L air	This is for the acute studies in this reference. In acute toxicity studies, groups of Albino rats (10-54/group, sex not specified) were exposed to 1,2-dichloroethane via whole-body inhalation to 1.2, 2.4, 3.2, 4.0, 6.1, 12.1, 48.6, and 81.0 (mg/L) for various exposure durations ranging from 0.1 to 8 hrs. Animals were evaluated for mortality, body weight, and clinical signs and special groups of animals (exposure parameters not clearly specified) were used for histological examinations of select organs. A third set of animals (4-6/group) were exposed to 0.8, 1.2, 4.0, 12.1, and 48.6 mg/L for unspecified durations in order to determine NOAEL and LOAEL values. These studies indicate that acute exposure to 1,2-dichloroethane causes degeneration, necrosis, and hemorrhage of the liver, kidneys, and adrenals, and pulmonary edema, however, the specific exposure conditions at which these effects were observed is not clearly reported.	Overall the study details and data reporting of body weights, clinical signs, and histological evaluations were extremely limited and details were not adequately described by exposure condition. The mortality data, including the LD50 determinations, were adequately reported; however, the available LD50 values are for non-standard durations of exposure. General reporting of other study details (e.g., animal allocation, test substance storage, animal husbandry conditions etc.) were limited.	Mortality: High	Spencer et al. 1951 62617

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study did not follow a specific guideline or report GLP practices. Mouse; B6C3F1 - [mouse]; Male	i.p single dose Single i.p dose	POD: 200 mg/kg (NOAEL, no liver or kidney effects observed following a single i.p dose in mice) 0, 200 mg/kg-bw/day	A primarily mechanistic study included an acute i.p experiment designed to evaluate the potential for 1,2-DCE to induce hepatotoxicity in mice and that measured apical endpoints. Male B6C3F1 mice (3-5/group) were either sham-treated or injected with piperonyl butoxide (an inhibitor of microsomal metabolism). A separate group of animals was administered carbon tetrachloride, presumed positive control. After 1 hr, animals were injected, i.p. with 200 mg/kg 1,2-DCE in corn oil (5mL/kg volume), or corn oil alone and sacrificed after 24 hrs. Comparing animals treated with 1,2-DCE alone to the vehicle controls, no significant changes in relative liver or kidney weights, or in serum L-iditol dehydrogenase or alanine aminotransferase were observed. PIB treatment alone induced a significant (16%) increase in liver weights which was not significantly changed with 1,2-DCE treatment alone. Mechanistic experiments included an in vivo genotoxicity assay showing a significant decrease in the fraction of hepatic dsDNA (% of control) in animals 4 hrs following injection with 200 mg/kg 1,2-DCE. Other experiments included a time-course of hepatic glutathione depletion in animals treated with 1,2-DCE alone or following pretreatment with PIB. It was determined that PIB pre-treatment did not significantly inhibit the glutathione depleting effect of DCE at 1hr after DCE administration. Experiments (including an acute hepatotoxicity test) were also performed on 2-chloroethanol (an oxidative metabolite of 1,2-DCE).The main conclusion of the study was that a product of the direct glutathione conjugation pathway is likely responsible for the hepatic DNA damage in mice caused by 1,2-DCE.	No major limitations identified.	Hepatic/Liver, Renal/Kidney, Genotoxicity: High	Storer and Conolly 1985 200613

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study did not follow a specific guideline or report GLP practices. Mouse; B6C3F1 - [mouse]; Male	i.p single dose Single i.p dose	POD: Positive for genotoxicity 0, 200 mg/kg-bw/day	In an in vivo-in vitro alkaline DNA unwinding assay, male B6C3F1 mice (3-5/group) animals pre-treated with corn oil or piperonyl butoxide (an inhibitor of microsomal metabolism). After 1 hr, animals were injected i.p. with corn oil (control) or 200 mg/kg 1,2-DCE (5mL/kg volume). After 4hrs hepatic DNA was assayed for single-strand breaks, using an alkaline DNA unwinding and hydroxylapatite batch chromatography. Each sample was assayed in duplicate. Results were reported as the fraction of total DS DNA recovered. Compared to negative controls, the fraction of double-stranded DNA recovered from mice treated with 1,2-DCE was significantly reduced by 23.8%, indicating 1,2-DCE was positive for SS DNA breaks. Pre-treatment with PIB increased damage further. The study authors concluded that the 1,2-DCE mediated DNA damage occurred independently of microsomal CYP450 mediated oxidative metabolism of 1,2-DCE. 1,2-DCE was positive for induction of SS DNA breaks in male mice treated via i.p injection.	The methods used were narrow in scope and only detected single strand breaks in alkali. The study authors indicated that if the test substance (or its metabolite) did not lead to formation of alkali-labile lesions, then other types of damage would not be detected by the DNA damage assay used.	Hepatic/Liver, Renal/Kidney, Genotoxicity: High	Storer and Conolly 1985 200613
no guidelines were used Mouse; B6C3F1 - [mouse]; Male	intraperitoneal 1 days	POD: 99 mg/kg (NOAEL, in vivo genotoxicity) 0, 1, 2, 3mmol/kg	1,2-dichloroethane, in vivo genotox: The molecular weight of 1,2-dichloroethane is 98.96 g/mol. POD was calculated using the following formula: mmol/kg * molecular weight (mg/mmol) = mg/kg; 1 mmol/kg * 98.96 mg/mmol = 99 mg/kg. In an in vivo genotoxicity assay, male B6C3F1 mice (6/group) were administered 0, 1, 2 or 3 mmol/kg (0, 99, 197 or 296 mg/kg, respectively) of 1,2-dichloroethane in corn oil once via i.p. injection. Four hours later mice were sacrificed and hepatic DNA damage was determined in an alkaline DNA unwinding assay for the presence of single-strand breaks and/or alkali-labile sites. The percentage of hepatic double stranded DNA was significantly decreased at 2 mmol/kg (-10.8%) and 3 mmol/kg (-16.9%) compared to control.	source of the animals was not identified and only 5-6 animals were used per group	In vivo Genotoxicity: High	Storer et al. 1983 5549990

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
no guidelines were used Mouse; B6C3F1 - [mouse]; Male	intraperitoneal 1 days	POD: 396 mg/kg (NOAEL, hepatic) 0, 2, 3, 4, 5, 6mmol/kg	1,2-dichloroethane, apical: The molecular weight of 1,2-dichloroethane is 98.96 g/mol. POD was calculated using the following formula: mmol/kg * molecular weight (mg/mmol) = mg/kg; 4 mmol/kg * 98.96 mg/mmol = 396 mg/kg. Male B6C3F1 mice (5-13/group) were administered 0, 2, 3, 4, 5 or 6 mmol/kg (0, 198, 297, 396, 495 or 594 mg/kg, respectively) of 1,2-dichloroethane in corn oil once via i.p. injection. 24 hours after injection mice were sacrificed. Endpoints evaluated included mortality, serum ALT (AAT), L-iditol dehydrogenase (SDH) and BUN levels and liver and kidney weight. No mice died at any dose. A significant increases in serum SDH were seen at 5 (14-fold) and 6 mmol/kg (42-fold) compared to control. At 6 mmol/kg significant increases in serum ALT (49-fold) and BUN (2.5-fold) were seen compared to control. Relative liver weight was significantly increased at 4 (10%) and 6 mmol/kg (21%). Relative kidney weights were significantly increased at 4 (7%), 5 (15%) and 6 mmol/kg (26%) compared to control. The study did not report the absolute organ weights or body weights so it can not be determined if the increase in relative weight is due to possibly decreased body weights of the exposed animals.	source of the animals was not identified and only 5-6 animals were used per group	Hepatic/Liver: Medium, Renal/Kidney: Medium	Storer et al. 1983 5549990
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	IP single dose Acute apical endpoints were evaluated 24 h after a single i.p. administration.	POD: 200 mg/kg (NOEL, liver and kidney) 0, 200, 300, 400, 500, 600mg/kg	B6C3F1 mice (5 males/group) were administered a single dose of the test substance at 0, 200, 300, 400, 500, and 600 mg/kg via I.P. injection in corn oil and sacrificed after 24 hours. Endpoints evaluated include mortality, clinical chemistry (l-iditol dehydrogenase IDH (aka SDH), ALT, and BUN), and organ weights (liver and kidney). No mortality occurred. Increased liver weights were observed at doses of 300, 400, and 600 mg/kg but not at 500 mg/kg, and increased serum levels of IDH and ALT at doses of 500 mg/kg and greater. Kidney weights were increased at 400 mg/kg and greater and BUN was increased at 600 mg/kg (but was not statistically significant). Based on these results, the authors identify a "threshold exposure level" of 500 mg/kg. The non-necrogenic dose levels identified in this experiment were used to set doses for a subsequent evaluation of genotoxicity following i.p. exposure.	No major limitations.	Hepatic/Liver, Mortality, Renal/Kidney: High	Storer et al. 1984 200614

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	Oral: Gavage single dose Acute apical endpoints were evaluated 24 h after a single oral administration.	POD: 200 (NOEL, liver and kidney) 0, 200, 300, 400, 500, 600mg/kg	B6C3F1 mice (5 males/group) were administered a single dose of the test substance at 0, 100, 200, 300, 400, 500, 600 mg/kg via oral route in corn oil and sacrificed after 24 hours. Endpoints evaluated include mortality, clinical chemistry (l-iditol dehydrogenase IDH (aka SDH), ALT, and BUN), and organ weights (liver and kidney). Mortality occurred in 0/5, 0/5, 0/5, 2/5, 4/5 and 4/5 animals at 0, 200, 300, 400, 500, and 600 mg/kg, respectively. Increased liver weights were observed at doses of 400 mg/kg and greater, with increased serum levels of IDH and ALT at doses of 200 mg/kg and greater. Kidney weights were increased at 300 mg/kg and greater and BUN was increased at 200 mg/kg and greater (but was not statistically significant). Based on these results, the authors identify a "threshold exposure level" of 400 mg/kg. The non-necrogenic dose levels identified in this experiment were used to set doses for a subsequent evaluation of genotoxicity following oral exposure.	No major limitations.	Hepatic/Liver, Mortality, Renal/Kidney: High	Storer et al. 1984 200614
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	Inhalation: Gas 4 hours Animals were exposed in inhalation chambers for 4 hours and sacrificed 24 h after exposure to evaluate acute apical endpoints. Nominal concentrations were 150, 500, 1000, 2000. Actual concentrations reported here are time weighted average concentrations based on samples taken at 15 minute intervals.	POD: 639.5 mg/m3 (158 ppm) (NOAEL, liver and kidney) 0, 158, 499, 1072, 1946 ppm (in air, water, or food)	B6C3F1 mice (5 males/group) were exposed to the test substance at 0 (room air), 158, 499, 1072, and 1946 ppm (time weighted average) (corresponding to 0, 639.5, 2019.67, 4338.86, and 7876.33 mg/m3 based on MW=98.96) via inhalation for 4 hours and sacrificed 24 hours after exposure. Endpoints evaluated include, mortality, clinical chemistry (l-iditol dehydrogenase IDH (aka SDH), ALT, and BUN), and organ weights (liver and kidney). Mortality occurred in 0/5, 0/5, 0/5, 4/5, and 5/5 animals at 0, 158, 499, 1072, and 1946 ppm, respectively. DNA damage was present at 1072 ppm and greater at 4 hours. Increased liver weights were observed at doses of 1072 ppm and greater, though the high mortality rate made this observation statistically insufficient. Increased serum levels of IDH and ALT were observed at doses of 499 ppm and greater. Kidney weights and BUN were increased at 499 ppm and greater. The LOAEL is 499 ppm (2019.67 mg/m3) based on increased kidney weight and serum BUN, the NOAEL is 158 ppm (639.5 mg/m3). Based on these results, the authors identify a "threshold exposure level" of 500 ppm. The non-necrogenic dose levels identified in this experiment were used to set doses for a subsequent evaluation of genotoxicity following inhalation exposure.	No major limitations.	Hepatic/Liver, Mortality, Renal/Kidney: High	Storer et al. 1984 200614

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	IP single dose DNA damage evaluated in hepatic nuclei of mice sacrificed 4 h after a single i.p. administration.	POD: Positive for DNA damage 0, 100, 150, 200, 300mg/kg	B6C3F1 mice (5 males/group) were administered a single dose of the test substance at 0, 200, 300, 400, 500, and 600 mg/kg via I.P. injection in corn oil and sacrificed after 24 hours. For evaluation of DNA damage, groups of 5-6 animals were administered the test substance at doses of 0, 100, 150, 200, 300 mg/kg via IP injection for 4 hours or 200 mg/kg for 24 hours for evaluation of DNA damage. No mortality occurred. DNA damage in hepatic nuclei (characterized by single-strand breaks) was present at 150 mg/kg at 4 hours and at 200 mg/kg at 4 and 24 hours. The study is positive for increased DNA damage.	No major limitations.	Hepatic/Liver, genotox: High	Storer et al. 1984 200614
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	Oral: Gavage single dose DNA damage was evaluated in hepatic nuclei of mice sacrificed 4 h after a single oral administration	POD: Positive for DNA damage 0, 100, 200, 300, 400mg/kg	B6C3F1 mice (groups of 4-8 animals) were administered a single dose of the test substance at 0, 100, 200, 300, or 400 mg/kg via oral route in corn oil and sacrificed after 4 hours. DNA damage in hepatic nuclei (characterized by single-strand breaks) was present at 100 mg/kg at 4 hours. The study is positive for increased DNA damage at all dose levels.	No major limitations.	Hepatic/Liver, genotox: High	Storer et al. 1984 200614
Non-guideline. Mouse; B6C3F1 - [mouse]; Male	Inhalation: Gas 4 hours DNA damage was evaluated in mice exposed via inhalation for 4 h and sacrificed 4.5 to 5.5 h after initiation of exposure.	POD: Positive for DNA damage only at doses causing high levels of mortality within 24hr 0, 158, 499, 1072, 1946 ppm (in air, water, or food)	B6C3F1 mice (groups of 5-10 animals) were exposed to the test substance at 0 (room air), 158, 499, 1072, and 1946 ppm (time weighted average) (corresponding to 0, 639.5, 2019.67, 4338.86, and 7876.33 mg/m ³ based on MW=98.96) via inhalation for 4 hours and sacrificed 4.5 to 5.5 h after initiation of exposure. In corresponding animals evaluated for apical endpoints at the same doses, mortality occurred in 0/5, 0/5, 0/5, 4/5, and 5/5 animals 24 h post-exposure at 0, 158, 499, 1072, and 1946 ppm, respectively. DNA damage was present only at exposure levels producing high mortality within 24 h (1072 and 1946 ppm).	No major limitations.	Hepatic/Liver, genotox: High	Storer et al. 1984 200614
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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
<p>"All experiments were carried out in accordance with the guidelines of the Ethics Committee for Experimental Animals of the National Institute for Environmental Studies, Japan."</p> <p>Mouse; ICR - [mouse]; Male</p>	<p>intraperitoneal Once</p> <p>Administered doses varied by test as follows: Righting reflex & 24-hr lethality = 125, 250, 500, 1000 mg/kg Bridge Test & FR20 Operant Test & MULT Operant Test = 0 (olive oil), 62.5, 125, 250, 500 mg/kg</p>	<p>POD: 424 mg/kg/day (ED50, behavioral; determined by study authors)</p> <p>0, 62.5, 125, 250, 500, 1000mg/kg</p>	<p>Male ICR mice (10/group) were administered 125, 250, 500 or 1000 mg/kg of 1,2-dichloroethane in olive oil once via i.p. injection (a negative control group was not included). The ability of the animals to right themselves after being inverted (righting reflex) was examined 30 minutes after injection. Mortality was determined at 24 hours post-injection. Another group of male ICR mice were administered 0, 62.5, 125, 250 or 500 mg/kg of 1,2-dichloroethane in olive oil once via i.p. injection and used for behavioral tests (7-15/group/test). Behavioral tests were performed 20-30 minutes after injection and included the bridge test (ability stay on a wooden rod) and response rate in FR20 operant test (utilizes operant behavior [lever-pressing] sustained by FR20 schedule of food reinforcement) and MULT operant test (utilizes operant behavior [lever pressing] sustained by a multiple schedule [FR20/FR20-punishment] of food reinforcement). 0/10 mice died at 125 and 250 mg/kg, 7/10 mice died at 500 mg/kg and 10/10 mice died at 1000 mg/kg (24h LD50 = 486 mg/kg, reported by authors). No loss of righting reflex was seen at any dose (even at doses that were lethal). Response rates were significantly reduced in the MULT operant test during the safe period at 500 mg/kg (ED50: 424 mg/kg, determined by study authors) compared to control, but not during the alarm period. Response rate in the FR20 operant test was significantly reduced at ≥ 62.5 mg/kg in a dose-related manner (ED50: 545 mg/kg, determined by study authors) compared to control. No significant differences were seen in the bridge test compared to control.</p>	<p>Negative control group was not included for righting reflex (not needed for LD50).</p>	<p>Neurological/Behavioral, Mortality: High</p>	<p>Umezue et al. 2014 5554867</p>

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study protocol has been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals, and was carried out in accordance with the National Institutes of Health guidelines in a manner that minimized animal suffering and animal numbers. Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day Animals were exposed for 2 or 3 days in this timeline study (1, 2 or 3 days)	POD: 1200 mg/m3 (LOAEL, mechanistic) 0, 1.2g/m3	Female Kunming albino mice (n=20) were exposed to 0 or 1200 mg/m3 of 1,2-dichloroethane 3.5 hours/day for 2 or 3 days in a static inhalation chamber. Endpoints evaluated included mortality, clinical signs of toxicity, and protein and RNA expression of aquaporin 4 (AQP4) and matrix metalloproteinases (MMP2 and MMP9) in the brain (determined by immunofluorescence, western blot and real-time PCR). Mortality rates were 10% (2 day exposure) and 25% (3 day exposure) (control data not reported). Exposed mice had body tremors and forelimb flexure that became more severe with prolonged exposure, these symptoms were not seen in control mice (data not shown). Significant increases in protein levels of AQP4 and mRNA A levels of MMP9 were seen after two and three days of exposure compared to control. Additionally, significant increases in protein levels of MMP2 and MMP9 and mRNA levels of AQP4 were seen after three days of exposure compared to control.	Study used a static inhalation chamber to deliver test substance.	Neurological/Behavioral: Uninformative	Wang et al. 2014 4453007
This study protocol has been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals, and was carried out in accordance with the National Institutes of Health guidelines in a manner that minimized animal suffering and animal numbers. Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day 1 days Animals were exposed for 1 day in this timeline study (1, 2 and 3 days).	POD: 1200 mg/m3 (LOAEL, mechanistic) 0, 1.2g/m3	Female Kunming albino mice (n=20) were exposed to 0 or 1200 mg/m3 of 1,2-dichloroethane 3.5 hours/day for 1 day in a static inhalation chamber. Endpoints evaluated included mortality, clinical signs of toxicity, and protein and RNA expression of aquaporin 4 (AQP4) and matrix metalloproteinases (MMP2 and MMP9) in the brain (determined by immunofluorescence, western blot and real-time PCR). Mortality rate was 5% in exposed the exposed group (control group not reported). Exposed mice had body tremors and forelimb flexure, these symptoms were not seen in control mice (data not shown). No significant changes in AQP4, MMP4 or MMP9 were seen in the cerebral tissue compared to control.	Study used a static inhalation chamber to deliver test substance.	Neurological/Behavioral: Uninformative	Wang et al. 2014 4453007

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
In compliance with The Guide for the Care and Use of Laboratory Animals Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 6 hours/day 1 days Animals were exposed to concentrations of 0, 2.5, 5 or 10 g/m3 (2500, 5000 and 10,000 mg/m3) for 6 hours.	POD: 2500 mg/m3 (NOAEL, neurological (2.5 g/m3)) 0, 2.5, 5, 10g/m3	Sprague-Dawley rats (6/group) were exposed to 1,2-dichloroethane at 0, 2500, 5000, or 10,000 mg/m3 for 6 hours. Endpoints included morphology/structure/histopathology of brain tissue and water contents in the cerebral cortex and medulla. In animals exposed to 5 or 10,000 mg/m3, increased water content in the cortex and histological changes in the cerebral tissues were observed. Histological changes included slight brain dropsy (swelling) at 5000 mg/m3, as indicated by loose tissues and enlarged spaces surrounding the cells and vessels, with severe brain dropsy occurring at 10,000 mg/m3; mitochondrial enlarging reported, but no mitochondria-specific stain was used so those results seem unacceptable; edema was observed in the brain of animals treated with 5000 and 10,000 mg/m3. Water content was not increased in the medulla of animals in any exposure group. The cerebral cortex seemed to be the more sensitive tissue, compared to the medulla. The NOAEL was 2500 mg/m3 based on brain tissue effects (changes in morphology of cerebral tissue- not reported, and negligible change in water content, Table 2); there was significant increase in cerebral cortex water content, and significant changes in neural cell morphology and appearance (Figures 1 and 2) at 5000 and 10,000 mg/m3 for 6hours.	The study evaluated a limited number of parameters for neurological effects (water content in cortex and medulla of cerebral tissue and histopathology in cerebral tissue). No behavioral effects were reported. Major reporting discrepancies included 1) comparing results text to figure legends it was unclear if panel d was representative of 5 or 10mg/cubic meters; 2) High concern there was no concurrent controls run for the time-dependent effects testing since the reported values for both cortex and medulla are identical for the control groups (74.22 +/- 1.77; row 1 of Tables 1 and 2) and between 5mg/cubic meters for 6hrs (Table 1) and 0hours unclear if it is 5 or 10mg/cubic meters (row 3 of Table 1 and row 2 of Table 2); though given that the latter value matches between Tables 1 and 2, 5g/cubic meters for 6hours for Table 1 and 0 hours for Table 2 suggests that the time-dependent study was performed with 5g/cubic meters and NOT 10g/cubic meters. Other than units of exposure reported as g/cubic meters, the methods never stated the route or method of exposure, whether it was nose/head only inhalation, or whole body. Study authors reported enlarged mitochondria and other cell-type specific changes, but no cell-specific stain was used to definitively identify these cell types/ structures.	Neurological/Behavioral: Uninformative	Zhang et al 2011 734177

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
In compliance with The Guide for the Care and Use of Laboratory Animals Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 3 hours/day 1 days Animals were exposed to a concentration of 10 g/m ³ (10,000 mg/m ³) for 0, 3, 6, or 12 hours. Unclear, poorly reported what dose was used for this time-dependent study protocol, 5 or 10g/cubic meters due to reporting discrepancies between methods, results and figure legends.	POD: 10,000 mg/m³ (LOAEL, neurological (10 g/m³)) 0, 10g/m ³	Sprague-Dawley rats (6/group/sex) were exposed to 1,2-dichloroethane at 0 or 10,000 mg/m ³ for 3, 6, or 12 hours. Endpoints included morphology/structure/histopathology of brain tissue and water contents in the cortex and medulla. In test substance-exposed animals, increased water content in the cortex and histological changes in the cerebral tissues were observed. Histological changes in test substance-exposed animals included evidence of brain dropsy (swelling), with significantly widened perivascular spaces and loosened cerebral tissues. The perineuronal and perivascular spaces in animals exposed to 10,000 mg/m ³ for 12 h were much larger than those treated for 6 h, indicating that the test substance induced cerebral pathological changes in a time-dependent manner. The effects were reported to be time-dependent comparing panels c and d in Figures 1 and 2, at 10000mg/cubic meters for 6 versus 12 hours... though there were reporting discrepancies here, comparing results text to figure legends. Unclear if panel d was representative of 5000 or 10000mg/cubic meters. Water content was not increased in the medulla in test substance-exposed animals compared to controls. Suggests that the cortex was the more sensitive tissue for exposure to test substance. The LOAEL was 10,000 mg/m ³ based on reported brain effects (changes in morphology of cerebral tissue; increased water content in cortex) at the only concentration tested.	The study evaluated a limited number of parameters for neurological effects (water content in cortex and medulla of cerebral tissue and histopathology in cerebral tissue). No behavioral effects were reported. Major reporting discrepancies included 1)comparing results text to figure legends it was unclear if panel d was representative of 5 or 10mg/cubic meters; 2) High concern there was no concurrent controls run for the time-dependent effects testing since the reported values for both cortex and medulla are identical for the control groups (74.22 +/- 1.77; row 1 of Tables 1 and 2) and between 5mg/cubic meters for 6hrs (Table 1) and 0hours unclear if it is 5 or 10mg/cubic meters (row 3 of Table 1 and row 2 of Table 2); though given that the latter value matches between Tables 1 and 2, 5g/cubic meters for 6hours for Table 1 and 0 hours for Table 2 suggests that the time-dependent study was performed with 5g/cubic meters and NOT 10g/cubic meters.The effects were reported to be time-dependent comparing panels c and d in Figures 1 and 2, at 10000mg/cubic meters for 6 versus 12 hours... though there were reporting discrepancies here, comparing results text to figure legends. Unclear if panel d was representative of 5000 or 10000mg/cubic meters.12 hour water content results were not reported in Table 2.Other than units of exposure reported as g/cubic meters, the methods never stated the route or method of exposure, whether it was nose/head only inhalation, or whole body. Unknown how a test substance treatment group can be treated for 0hours, for the time-dependent study and how that is different from the control group (time-dependent study, Table 2).Study authors reported enlarged mitochondria and other cell-type specific changes, but no cell-specific stain was used to definitively identify these cell types/structures.	Neurological/Behavioral: Uninformative	Zhang et al 2011 734177

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Experiments involving animals adhered to the Guiding Principles in the Care and Use of Animals approved by the Council of the American Physiological Society. All experimental protocols were approved by the Animal Ethics Committee of Central South University, Changsha, China (SYXK2011-0001). Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 4 hours	POD: 4000 mg/m3 (LOAEL, neuro) 0, 4, 12g/m3	Male Sprague-Dawley rats (6/group) were exposed to 0, 4000 or 12000 mg/m3 of 1,2-dichloroethane for 4 hours via whole body inhalation. Brain images were captured using a diffusion magnetic resonance imaging (dMRI) and MRI scanner three days after exposure ended. Rats were sacrificed after imaging and brain were collected for histology. Behavior of the animals were recorded during and after exposure. Rats were sedated during the first 24 hours and activity slowly returned to normal on the second day (data not shown). Lesions with brain edema were observed in the white matter of both hemispheres at ≥ 4000 mg/m3 (observed with imaging and HE staining) which were not seen in the control group. The strongest affected regions were the lateral ventricle and dentate nuclei. Imaging data suggests that primarily cytotoxic edema occurred after exposure. A significant decrease in the number of fiber tracts was seen in the cerebellum, internal capsule and midbrain at ≥ 4000 mg/m3 compared to control.	NO Major limitations	Neurological/Behavioral: Medium	Zhou et al. 2016 4697102
Experiments involving animals adhered to the Guiding Principles in the Care and Use of Animals approved by the Council of the American Physiological Society. All experimental protocols were approved by the Animal Ethics Committee of Central South University, Changsha, China (SYXK2011-0001). Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 1.5 hours	POD: 4000 mg/m3 (LOAEL, neuro) 0, 4, 12g/m3	Male Sprague-Dawley rats (6/group) were exposed to 0, 4000 or 12000 mg/m3 of 1,2-dichloroethane for 1.5 hours via whole body inhalation. Brain images were captured using a diffusion magnetic resonance imaging (dMRI) and MRI scanner three days after exposure ended. Rats were sacrificed after imaging and brain were collected for histology. Behavior of the animals were recorded during and after exposure. Rats were sedated during the first 24 hours and activity slowly returned to normal on the second day (data not shown). Lesions with brain edema were observed in the white matter of both hemispheres at ≥ 4000 mg/m3 (observed by imaging and HE staining) which was not seen in the control group. The strongest affected regions were the lateral ventricle and dentate nuclei. Imaging data suggests that primarily cytotoxic edema occurred. A significant decrease in the number of fiber tracts was seen in the cerebellum, internal capsule and midbrain at ≥ 4 g/m3 compared to control.	No Major limitations	Neurological/Behavioral: Medium	Zhou et al. 2016 4697102

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Isomer: 1,2-Dichloroethane - Acute (less than or equal to 24 hr)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID

* Overall Quality Determination

¹ 10699356: Groups of five rats/sex were exposed for four hours, using a whole-body inhalation exposure system, to a mean chamber concentration of 2520 ppm EDC vapor (10.2 mg EDC/L air). Mortality was observed in 2/5 male and 5/5 female rats. Three male rats survived the four-hour exposure to the test material as well as the two-week post-exposure observation period. There were no clinical effects noted during the four-hour exposure period. All animals exhibited clinical signs following exposure. Prior to death, animals exhibited clinical observations including combinations of decreased or absent activity, decreased or absent reactivity to stimuli, decreased responsiveness to touch, decreased or increased resistance to removal, decreased extensor-thrust response, decreased muscle tone or abnormally soft/limp muscles, soft or absent feces, repetitive circling, repetitive head bobbing, eyelids partially closed, inability to walk, knuckling/stumbling/poor coordination, increased lacrimation, uncoordinated gait, cold to the touch, thin appearance, arched back, hindlimbs splayed, rapid respiration, ungroomed appearance, and soiling (perinasal, perioral, and perineal). Observations noted in the three surviving male rats include decreased activity, decreased reactivity to stimuli, knuckling/stumbling/poor coordination, and repetitive head bobbing. Mean body weight losses of 6.5 and 7.5% were noted for male and female rats, respectively, on test day 2. Pre-exposure mean body weight values for surviving male rats were exceeded on test day 14. Males found dead (Day 11) were found to have decreased body fat and gas in the gastrointestinal tract; females found dead (Days 2, 4, and 5) had no visible lesions (2/5), dark lungs (1/5), hemolyzed blood in the gastrointestinal tract (2/5), pale liver (1/5), and multifocal ulcer in the glandular mucosa of the stomach (2/5). There were no visible treatment-related lesions noted in any of the surviving rats exposed to 1,2-dichloroethane at the test day 15-scheduled necropsy. Based on the data generated in this study, the 4-hour LC50 of inhaled 1,2-dichloroethane vapors is > 2520 ppm (10.2 mg/L) for male and < 2520 ppm (10.2 mg/L) for female F344/DuCrI rats.

- ² 6570013: 4-hr exposure Fisher F344 rats (5/sex/concentration) were exposed, whole body, to target 1,2-dichloroethane vapor concentrations of 0, 200, 600, or 2,000 ppm for 4hrs, a 50-ppm group was added, but not exposed concurrently. Measured mean chamber concentrations were 0, 52.4, 196.4, 607.8, and 2,029 ppm, respectively. Nominal concentrations were 75, 102, 100, and 85% of the analytical values. In-life observations included body weights, organ weights, and evaluation of bronchoalveolar lavage fluid from all rats. Rats were sacrificed and subjected to necropsy 24 hours post-exposure. Histopathological examinations were performed on the upper and lower respiratory tract, liver, and kidneys (control and high-dose animals only). No mortality was observed. After the first exposure, 5/5 males and 4/5 females in the 1,029 ppm groups had an uncoordinated gait; this was resolved by day 2. An exposure-related loss in body weight was observed in both sexes at ≥ 196.4 ppm; however, the weight loss was not statistically significant because control animals also lost weight. In males, the loss was 3.3, 1.6, 5.8, 6.2, and 10.8 mg in the control, 52.4, 196.4, 607.8, and 2,029 ppm groups, respectively. The effect in females was less pronounced. Due to the exposure concentration-related response, the study authors considered weight loss to be an effect of treatment. Examination of BAL fluid showed no changes that were considered by the authors to be biologically significant. Significant organ weight changes included significant increases in absolute and relative adrenal and kidney weights in both sexes at 2,020 ppm. Relative liver weights were also significantly changed at this concentration but were decreased in males and increased in females and the magnitudes of change were small. Changes in testes/ovary, lung, or brain weights were considered sporadic and not related to exposure. There were no gross changes attributed to exposure. Histopathological changes were observed in nasal, kidney, and liver tissues. Degeneration with necrosis of the olfactory mucosa occurred in 3/5 and 4/5 males and females at 196.4 ppm, and in 100% of animals at higher concentrations, compared to 0/5 controls. There were no effects at 52.4 ppm. At 2,029 ppm 5/5 males showed altered tinctorial properties and increased basophilia of the renal tubular epithelium and female rats showed degeneration with necrosis in the kidney (5/5) and altered cytoplasmic homogeneity and periportal eosinophils in the liver (5/5). Aggregates of macrophage adjacent to necrotic or degenerative hepatocytes were observed in 0/5 controls, and 2/5 and 4/5 females at 607.8, and 2,029 ppm, respectively, and in 3/5 males at 2,029 ppm. Decreased vacuolation in the livers of high exposure males was suspected to be due to decreased food consumption, although this endpoint was not measured in this study. The author reported NOEL was 50 ppm, based on injury to the olfactory mucosa. The LOEL was 200 ppm. It is unclear how reliable these toxicity values are because the 50 ppm group was not concurrently exposed. Therefore, the study authors did a second experiment (below) to fine-tune the toxicity values. 8-hr exposure Fisher F344/DuCrI rats (5/sex/concentration) were exposed, whole body, to target 1,2-dichloroethane vapor concentrations of 0, 50, 100, and 150 ppm for 8 hours. Measured mean chamber concentrations were 0, 52.8, 107 and 155.8 ppm, respectively. Nominal concentrations were 83, 106, and 102% of the measured values. Animals were observed for signs of toxicity and body weights were recorded. Organ weights were not measured. Nasal tissues only from all rats were microscopically examined. No mortality or clinical abnormalities were observed. Slight body weight loss was noted in all groups on day 2, but there was no relation to exposure concentration. No gross abnormalities related to exposure were observed. Nasal lesions were observed in 0/5, 0/5, 1/5 and 4/5 males and 0/5, 0/5, 3/5, and 4/5 females in the 0, 52.8, 107 and 155.8 ppm groups, respectively. The reported NOEL was 50 ppm, based on injury to the olfactory mucosa. The LOEL was 100 ppm. 50 ppm was converted to mg/m³ using the following formula: $(\text{PPM} \times \text{MW}) / 24.45$, using a molecular weight of 98.96. 50 ppm = 202 mg/m³
- ³ 6570013: Fisher F344 rats (10/sex/concentration) were exposed, whole body, to target 1,2-dichloroethane vapor concentrations of 0, 200, 600, or 2,000 ppm for 4hrs. Measured mean chamber concentrations were 0, 52.4, 196.4, 607.8, and 2,029 ppm, respectively. The Endpoints included detailed clinical observations, body weights, FOB (including hand-held and open-field observations, grip performance, landing foot splay, rectal temperature, and motor activity), and ophthalmological examinations. Animals were sacrificed after a 2-week observation period and all rats were grossly examined. Neuropathologic evaluations were done on 5/sex from the control and high exposure groups. This included examination of select nervous system organs and histopathologic examination of the nasal tissues. No mortality, daily or detailed clinical observation or ophthalmological change attributed to exposure were observed. Body weights of high exposure animals significantly differed from controls at multiple time points. A transient loss in body weights was observed in both sexes between days 1 and 2 at 600 ppm. Numerous changes were reported in the FOB. "Ranked FOB observations on day 1 that were attributed to treatment were as follows: a decrease in resistance to removal from the home cage, increased palpebral closure, increased lacrimation (females only), a decrease in the extensor thrust response, decreased response to sharp noise and tail pinch, an increase in urination, an increase in defecation (males only), and slight incoordination of gait in rats of the 2000 ppm exposure group. In addition, the response to sharp noise was decreased in females exposed to 600 ppm and urination was increased in males and females exposed to 600 ppm on day 1. There were no treatment-related ranked FOB observations present on day 8 or day 15. For categorical FOB observations, there were no findings related to treatment." There were no effects on grip performance, and no significant differences, compared to controls, in landing foot splay. Rectal temperatures transiently decreased on day 1 in a dose-related manner and the decrease was significant in males at 2,000 ppm and in females at ≥ 600 ppm. No effects on rectal temperature were observed on days 8 and 15. Motor activity counts were significantly decreased in females only at 2,000 ppm. The effect was transient (observed on day 1 only). No gross lesions related to exposure were observed. Significant histopathological effects included exposure-related effects on the olfactory mucosa in both sexes that were significant at ≥ 200 ppm. No increased incidences of lesions in other neurological tissues were observed. The reported neurotoxicity NOEL was 200 ppm based on changes in functional neurologic parameters in high exposure groups. 200 ppm was converted to mg/m³ using the following formula: $(\text{PPM} \times \text{MW}) / 24.45$, using a molecular weight of 98.96. 50 ppm = 809 mg/m³
- ⁴ 5447364: Groups of Sprague Dawley rats were exposed to EDC for 7 hrs/day, 5 days/week, at concentrations of 0, 5, 10, 50, and 150 ppm for 12 months. The current reference reports the clinical chemistry, hematology, and urinalysis results from blood collected at 12 months. Changes in hemoglobin levels were directionally inconsistent across groups of both sexes. Males exhibited a tendency towards reduced erythrocyte counts, but no significant changes were observed in either sex and no other signs of anemia were observed. Changes in hematocrit (increases rather than decreases) were of questionable biological significance. Blood urea nitrogen was significantly increased in a non-concentration-related manner and was significant in at 5, 50, and 150 ppm in males and all groups in females. There was a trend of increasing AST levels in both sexes, significant at ≥ 50 ppm. ALT and LDH activity were significantly increased in both males and females, but not in a clearly concentration-related manner and no changes in ALP were observed. Serum cholesterol and calcium levels (males) were significantly decreased, and uric acid and potassium levels were increased in both sexes at ≥ 10 ppm. Calcium levels in females were significantly decreased at ≥ 50 ppm. The toxicological relevance of some of these changes is unclear. A dose-related increase in alpha-2-serum globulins was seen in males, significant at 50 ppm, but not in females. Other hematology and serum chemistry changes either did not reach statistical significance, showed no clear relation to exposure concentration, and/or were not biologically significant. No significant urinary changes were observed in any exposure group. NOAEC and LOAEC values were not reported. – Under the consideration that only a limited number of endpoints were evaluated. The NOAEC for these endpoints was 150 ppm (607 mg/m³) based on the lack of clear indicators of organ-specific toxicity. Although some serum chemistry changes (e.g., increased ALT and increased BUN) are suggestive of possible liver or kidney effects, there were no clear and consistent changes in other blood or urinary parameters associated with toxicity in these organs. Exposure in ppm converted into mg/m³ for this review using the following formula: $\text{mg/m}^3 = (\text{ppm} \times \text{MW}) / 24.45$.
- ⁵ 5447301: Undiluted test substance (3.16, 3.98, 4.45, or 5.0 mL/kg) was applied to the clipped skin of male albino rabbits (6-11/group) under a double vinylite dam for 24 hrs. Actual volumes applied varied by individual and ranged from 7.6 to 14.1 mL. Animals both within groups and across groups were exposed on different days. It was not specified whether the application sites were washed. Animals were observed for 14 days for mortality. At sacrifice, body weights were recorded for surviving animals. Mortality occurred in 2/6, 3/11, 8/9, and 5/6 animals in the 3.16, 3.98, 4.45, or 5.0 mL/kg groups, respectively. The days to death varied from 1-11 days following application, animals in the highest dose group died within 1 day. Weight changes in the two higher dose groups were inconsistent with some surviving animals gaining weight as expected, but others apparently losing bodyweight. In animals that died, there was little or no deviation from the normal, in the appearance of visceral organs at autopsy (data not shown) Two LD50 values were provided; an LD50 of 3.89 (3.40 to 4.46 mL/kg) and a second LD50 which was described as being more precise LD50 4.79 (4.77 to 5.60) gm/kg (partially illegible on the copy provided). Due to illegibility, an LD50 value of $>4,000$ mg/kg is reported above. A statement in the text, appearing separate from the dermal study states: "Ethylene dichloride is not a primary skin irritant as the minimal detectable reactions produced in the vesicant test demonstrate." A second statement states "When this compound contacts the eyes of rabbits the resulting damage is no more severe than that produced by ethanol." Because no experiments related to these statements were included or described, it was assumed these were a reporting of findings from previous studies and these endpoints were not evaluated as part of this study.

- ⁶ 4492125: Male and Female Sprague-Dawley rats exposed to 0, 2,500, 5,000 or 10,000 mg/m³ 1,2-dichloroethane via inhalation for 12 hours and sacrificed. Endpoints evaluated included mortality, behavior during exposure, and analysis of the brain (gross, histopathological and transmission electron microscopy [TEM]). No rats died during treatment; however, all groups displayed abnormal behavior compared to controls. Rats treated with 2,500 mg/m³ were abnormally active (data not quantified), rats treated with 5,000 mg/m³ exhibited dysphoria, scratching mouth and nose and sometimes trembling, and rats treated with 10,000 mg/m³ moved slowly and rarely and exhibited side-lying with weakness (data not shown). Study reports gross and microscopic analysis showed edema in all brains treated with 1,2-dichloroethane, but does not provide specific details on the severity seen at what concentration. Water content in the cortex was significantly increased at 5,000 mg/m³ (3%) and at 10,000 mg/m³ (8%) compared to control. No change in water content in the medulla was seen at any concentration. It is not clear what, if any histological changes occurred at 2,500 mg/m³. The study reports histological changes of "treated rats" that are consistent with edema (perineuronal and perivascular spaces were enlarged) but not specify the severity or quantify results. It is reported that slight brain dropsy was seen at 5,000 mg/m³ and severe brain dropsy was seen at 10,000 mg/m³. Study shows representative photos for the control, 5,000 and 10,000 mg/m³ groups, but not the 2,500 mg/m³ group. TEM analysis revealed edema characteristics (i.e., cell swelling, interstitium loosening, swelling of medullated nerve fibers) in the 5,000 and 10,000 mg/m³ groups, but these changes were not seen in rats treated with 2,500 mg/m³ or control rats. Due to the lack of details reported for histology, regarding concentration were effects were seen and quantification of results, this reviewer does not feel comfortable making a POD call for the 2,500 mg/m³ group, therefore a POD of 5,000 mg/m³ (LOAEL) was made.

Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None. Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 6 hours/day 4 days Whole body inhalation chambers	POD: 3424 mg/m3 (LOAEL, hepatic); author selected 846ppm as the "...the minimally active concentration... designed as the lowest level of exposure eliciting significant differences (P< 0.02) in at least 2 biochemical parameters between control and experimental groups." 0, 846 ppm (in air, water, or food)	1,2-Dichloroethane: mw=98.96POD was determined using the following formula: (ppm * mw)/24.45 = mg/m3; (846 ppm * 98.96 g/mol)/24.45 = 3424 mg/m3Male Sprague-Dawley rats (unreported, uncertain number of rats/group; means of relative ratio (Figure 1) representative of 3-12 serum samples) were exposed to 0 or 846 ppm (1,858 mg/m3) of o-Dichlorobenzene via whole body inhalation for 4 days (6 hours/day). Rats were sacrificed 24 hours after last exposure. Endpoints evaluated included serum glutamate dehydrogenase (GLDH), AST (GOT), ALT (GPT) and sorbitol dehydrogenase (SDH) activities. Serum SDH levels were significantly increased. No other parameters were reported.	Liver histopathology and organ weight were not assessed. Only one dose studied for this repeated dose portion of the study. Respiration rate was not reported for 1,2-dichloroethane which is known to be a respiratory irritant. Individual animal data was not reported. Controls for this exposure group were not reported other than as part of the relative activity presented as a ratio of treated/untreated (Figure 1).	Hepatic/Liver: Medium	Brondeau et al. 1983 200247
None. Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 6 hours/day 2 days Whole body inhalation chamber	POD: 3424 mg/m3 (LOAEL, hepatic); author selected 309ppm as the "...the minimally active concentration... designed as the lowest level of exposure eliciting significant differences (P< 0.02) in at least 2 biochemical parameters between control and experimental groups." 0, 846 ppm (in air, water, or food)	1,2-Dichloroethane: mw= 98.96 g/mol POD was determined using the following formula: (ppm * mw)/24.45 = mg/m3; (846 ppm * 98.96 g/mol)/24.45 = 3424 mg/m3Male Sprague-Dawley rats (unreported, uncertain number of rats/group; means of relative ratio representative of 3-12 serum samples) were exposed 0 or 846 ppm (3460 mg/m3) of 1,2-dichloroethane via whole body inhalation for 2 days (6 hours/day). Rats were sacrificed 24 hours after last exposure. Endpoints evaluated included serum glutamate dehydrogenase (GLDH), AST (GOT), ALT (GPT) and sorbitol dehydrogenase (SDH) activities. Significant increases in serum ALT, GLDH and SDH levels were seen. No change in serum AST levels were observed.	Liver histopathology and organ weight were not assessed. Only one dose studied for this repeated dose portion of the study. Respiration rate was not reported for o-DCB which is known to be a respiratory irritant. Individual animal data was not reported. Controls for this exposure group were not reported other than as part of the relative activity presented as a ratio of treated/untreated (Figure 1).	Hepatic/Liver: Medium	Brondeau et al. 1983 200247
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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors did not report which, if any, compliance guidelines were adhered to, or report if study was conducted under GLP conditions. Mouse; C57BL - [mouse]; Male	intraperitoneal 5 days/week 5 days Following the five days of dosing, one to three male C57BL/6 mice were euthanized at each time interval post treatment of 8, 15, 31, and 46 days, and the testicular pathology assessed.	POD: 10 mg/kg/day (LOAEL, reproductive) 0, 10 mg/kg-bw/day	Sexually mature male C57BL/6 mice were administered 0, or 10 mg/kg/day of 1,2-dichloroethane in corn oil via i.p. injection once a day for 5 days. Mice were sacrificed at 8, 15, 31, and 46 days post-injection (1-3 mice/timepoint) and testicular pathology was assessed. Adverse pathology (tubular damage, marked vacuolization of cells and loss of spermatogonia) was evident 8 days after exposure (pathology score of 8.35) which deteriorated with time and plateaued from days 15-46 (scores ranged from 6.4-7.4). The average pathology score for controls was 9.46.	The study did not report how animals were allocated into groups. Storage conditions for test substance were not adequately reported.	Reproductive/Developmental: High	Daigle et al. 2009 5437237
None Rat; Sprague-Dawley - [rat]; Both	Oral: Gavage 7 days/week 10 days	POD: 30 mg/kg/day (NOAEL, liver) 10, 30, 100, 300 mg/kg-bw/day	In a 10-day gavage study, rats were treated with 1,2-dichloroethane at 0, 10, 30, 100, or 300 mg/kg/day. Endpoints assessed included mortality, clinical signs of toxicity, physiological/behavioral responses, body weights, food and water consumption, limited hematology, clinical chemistry, limited organ weights and gross necropsy, and comprehensive histopathology. The endpoints for the 10-day study did not include ophthalmoscopic examination or urinalysis (90-day study only). A NOAEL of 30 mg/kg/day was established based on increased relative liver weights and increased serum cholesterol levels in males and local effects (inflammation of the mucosal and submucosal layers of the forestomach of minimal severity) to the stomach in males and females (occurred in ~60% of animals). No other treatment-related effects were observed in the 10-day study.	None identified.	Hepatic/Liver: High, Gastrointestinal: Uninformative	Daniel et al. 1994 62965
GLP-compliant Rat; F344/DuCrI; Female	Inhalation: Vapor 6 hours/day 7 days/week 28 days Rats were exposed to 205 ppm (approx. 843 mg/m ³) 6 hours/day, 7 days/week for at least 28 days (range from 28-31 day). Rats were sacrificed immediately after exposure on the first diestrus after a minimum of 28 consecutive days.	POD: 832 mg/m³ (205 ppm) NOAEL for reproductive, body weight, mortality and clinical sign effects 0, 843 mg/m ³	See footnotes for full summary ¹	None	Reproductive/Developmental, Mortality, Nutritional/Metabolic, Clinical signs: High	Dow Chemical 2014 10609985

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
GLP-compliant Rat; F344/DuCrI; Female	Inhalation: Vapor 6 hours/day 7 days/week 28 days Rats were exposed to 205 ppm (approx. 843 mg/m ³) 6 hours/day, 7 days/week for at least 28 days (range from 28-31 day). Rats were sacrificed immediately after exposure on the first diestrus after a minimum of 28 consecutive days.	POD: Negative for genotoxicity 0, 843 mg/m ³	See footnotes for full summary ²	None	Gentotoxicity: High	Dow Chemical 2014 10609985
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Inhalation: Vapor 6 hours/day 5 days Rats were exposed up to 5 days with interim sacrifices occurring after 1 and 3 days.	POD: 818 mg/m³ (202 ppm; LOAEL for mechanistic; decrease in liver GSH) 0, 202 ppm (in air, water, or food)	Based on the molecular weight of 1,2-dichloroethane (98.96 g/mol). A concentration of 202 ppm would be equivalent to 818 mg/m ³ . Male Fisher 344 rats were exposed to 0 or 202 ppm of 1,2-dichloroethane 6 hours/day for up to five days via nose-only inhalation. Control rats were sacrificed before exposure (time 0) and after 6-hour exposure to air (6 hour) (n=3/time point) only on day 1. Exposed rats were sacrificed 1, 3 and 6 hours after exposure began and 2 hours after exposure ended on days 1, 3 and 5 (3/time point). Body weights were assessed at the time of sacrifice. Lungs, liver and kidney were collected to determine GSH levels in these tissues. No significant difference in body weights were seen compared to time 0 control or to 6-hour air control. Liver GSH levels decreased during exposure (1, 3, and 6 hours) on all days, but was more pronounced on day 1. Two hours after exposure ended, liver GSH levels returned to control levels. Kidney and lung GSH levels were minimally affected by exposure. A LOAEL of 202 ppm based on mechanistic data; decrease in liver GSH levels. A NOAEL of 202 ppm was determined for body weight changes.	The Control was only for one day exposure, there is not an unexposed control for day 3, 5 and any adverse effects on body weight due to 1,2-dichloroethane exposure can not be determined	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Oral: Gavage 5 days Rats were exposed up to 5 days with interim sacrifices occurring after 1 and 3 days.	POD: 150 mg/kg/day (LOAEL for mechanistic; decrease in liver GSH) 0, 150 mg/kg-bw/day	Male Fisher 344 rats were administered 0 or 150 mg/kg/day of 1,2-dichloroethane in corn oil via oral gavage once a day for a maximum of five days. Control animals were sacrificed prior to dosing and 8 hours post-dosing (3/timepoint). Exposed animals were sacrificed 0.5, 1, 2 and 8 hours after dosing on the first, third and fifth day of exposure. Liver, lungs, and kidneys were collected to evaluated levels of glutathione. No significant difference in body weights were seen compared to control animals. Liver GSH levels gradually decrease with time on all three days studied and was still evident at 8-hours post dosing (35-50% of controls). Kidney and lung GSH levels were minimally affected by exposure. A LOAEL of 150 mg/kg/day for mechanistic effects (lower hepatic GSH) and a NOAEL of 150 mg/kg/day for body weight changes were determined.	No major limitation.	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286
The study was conducted in compliance with Good Laboratory Practice Standards. Rat; Fischer 344 - [rat]; Male	Oral: Gavage 5 days Rats were exposed up to 5 days with interim sacrifices occurring after 1 and 3 days.	POD: 43 mg/kg/day (LOAEL for increases in body weight) 0, 43 mg/kg-bw/day	Male Fisher 344 rats were administered 0 or 43 mg/kg/day of 1,2-dichloroethane in water via oral gavage once a day for a maximum of five days. Control animals were sacrificed prior to dosing and 8 hours post-dosing (n=3/timepoint). Exposed animals were sacrificed 0.5, 1, 2 and 8 hours after dosing on the first, third and fifth day of exposure (n=3/timepoint). Body weights were measured at time of sacrifice. Liver, lungs, and kidneys were collected to evaluated levels of glutathione.No significant differences in body weights were seen when compared to body weights of controls sacrificed prior to dosing. Significant increases in body weights were seen at some time points when compared to the control group that received vehicle and were sacrificed 8 hours later. These increases were seen in rats exposed for 3 days and sacrificed at 0.5 hours (7%) and 8 hours (8%) post-dosing and also in rats exposed for 5 days and sacrificed 0.5 hour (9%) and 8 hours (11%) post-dosing.Liver GSH levels decreased after dosing but returned to control levels 8 hours after dosing. Slight decline in kidney GSH levels on hour after dosing and returned to control levels two hours after dosing. Lung GSH levels were slightly decreased one and two hours after dosing and returned to control levels by 8 hours post-dosing. A LOAEL of 43 mg/kg/day was determined for increases in body weight.	No major limitation.	Nutritional/Metabolic: High	Dow Chemical Co. 2006 625286

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non-guideline range-finding study; adherence to GLP was not specified. Rat; SPF; Male	Oral: Gavage 5 days/week 2 weeks 10 days Animals were dosed 5 days per week for 2 weeks.	POD: 100 mg/kg-day (NOAEL, mortality) 0, 3, 10, 30, 100, 300 mg/kg-bw/day	In a short-term range-finding study, male SPF Wistar rats (6/group) were administered 1,2-DCE (purity 99%) at doses of 0, 3, 10, 30, 100, and 300 mg/kg-day, via gavage in olive oil, 5 days per week, for two weeks. Animals were monitored for mortality, and measurements of body weight, growth (weight gain), food intake, select relative organ weights (liver, kidneys, testes, and adrenals), hematology, BSP retention time, and SGPT, Gl-6-Pase activities and triglyceride contents in the liver were recorded. Histopathology was conducted on a limited number of organs (liver, kidney, lung, and adrenals). All of the animals in the 300 mg/kg-day group died within the first 5 days of dosing. Histological examinations of these animals showed extensive vacuolization in the liver with fat droplets that were indicative of fatty degeneration. Other deaths, single animals in the 3 and 10 mg/kg-day groups were accidental (accidental intratracheal injection of the compound). In the surviving animals, there were no effects on weight gain or dose-related differences in food intake. The only hematological changes were non-dose-related increases in hematocrit levels in animals from the 3 and 30 mg/kg-day groups. Triglyceride content in the liver was also elevated in the 30 mg/kg-day group, but not at 100 mg/kg-day. Relative organ weights were comparable to controls (absolute weights were not reported). No other effects were observed, including no microscopic abnormalities. The 300 mg/kg-day dose is considered a FEL due to the 100% mortality observed. A NOAEL of 100 mg/kg-day was determined based on the lack of any adverse effects.	A limited number of endpoints or organs/tissues were assessed in this range-finding study. Some study details were limited and histopathology results were not quantitatively reported.	Mortality: High	van Esch et al. 1977 1772372
Experiments were conducted according to the Chinese National Institutes of Health guidelines for the protection and control of animals. GLP-compliance was not specified. Mouse; CD-1 - [mouse]; Male	Inhalation: Aerosol 6 hours/day 7 days/week 28 days	POD: 100 mg/m³ (NOEC, neurobehavioral changes and histopathology in the cerebellum) 0, 114.02, 368.14, 728.01 mg/m ³	See footnotes for full summary ³	A positive control was not used in this study, as is usually required for studies examining neurobehavioral endpoints. Adequate information regarding the test atmosphere (i.e., MMAD and GSD) was not reported. Respiratory rate was not reported and the test substance may be a respiratory irritant, introducing the potential for confounding via reflex bradypnea.	Neurological/Behavioral: Medium	Huang et al. 2020 7697651

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None reported Rat; Sprague-Dawley - [rat]; Male	intraperitoneal injection 7 days/week 30 days Some of the animals (at 0 and 10 mg/kg 1,2 DCA) were coexposed to Disulfiram to determine possible toxicologic interaction between both chemicals.	POD: 150 mg/kg/day (LOAEL, liver) 0, 150 mg/kg-bw/day	Male Sprague-Dawley rats (9/group) were administered 1,2-dichloroethane (150 mg/kg/day) or the vehicle (medium-chain triglyceride oil) for 30 days via intraperitoneal injection as a range-finding study for a 30-day inhalation study, which was reported in the same reference. Animals were weighed twice per week. Endpoints reported included food consumption, weights of liver, kidneys, lung, spleen, and testes, and histopathology. In test substance-treated animals, there was an increase in relative liver weight. No test substance-related effects were observed on cumulative food consumption, relative lung weight, or incidence of bilateral testicular atrophy. The LOAEL was 150 mg/kg/day based on increased relative liver weight at the only dose tested.	Evaluations were limited to a few endpoints/organs and results for treatment-related effects on relative liver weight were only reported in the text qualitatively. The IP study served as a range finding study for the associated inhalation study.	Reproductive/Developmental: Medium, Hepatic/Liver: Medium, Nutritional/Metabolic: Medium, Lung/Respiratory: Medium	Igwe et al. 1986 200386
None reported Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 7 hours/day 5 days/week 30 days Nominal exposure concentrations were 153 ± 3, 304 ± 5, and 455 ± 7 ppm. Conversion of concentrations: 153, 304, and 455 ppm = 619, 1230, and 1842 mg/m ³ , respectively (based on MW = 98.96 Daltons). Some of the animals (at 0, 153, 304 and 455 ppm) were coexposed to Disulfiram to determine possible toxicologic interaction between both chemicals.	POD: 619 mg/m³ (NOAEL, mortality (153 ppm)) 0, 153, 304, 455 ppm (in air, water, or food)	Male Sprague-Dawley rats (12/group) were exposed to 1,2-dichloroethane at 153, 304, or 455 ppm for 7 hours/day, on 5 consecutive days/week, for 30 days. Control animals (30/group) were exposed to filtered air only. Endpoints included mortality, clinical signs, body weight, and organ weight and histopathology of liver, kidneys, spleen, and testes. Mortality occurred in 1/12 and 2/12 animals at 304 and 455 ppm, respectively. Decreased body weight change and increased relative (to body weight) liver weight were observed in animals exposed to 455 ppm. No effects on cumulative mean daily food consumption, relative spleen or testes weights, or histopathology in the liver, spleen, or testes were observed. The NOAEL was 153 ppm (619 mg/m ³) based on mortality at 304 ppm (1230 mg/m ³).	Evaluations were limited to a few endpoints/organs (e.g., only liver, spleen, and testes were evaluated for weight and histopathological changes). Absolute liver weights were not reported.	Immune/Hematological: High, Mortality: High, Reproductive/Developmental: Medium, Hepatic/Liver: Medium, Nutritional/Metabolic: Medium	Igwe et al. 1986 200386

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non-guideline study Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 7 hours/day 5 days/week 4 weeks 18 days It was specified that the exposure period was 30 days. It is assumed that this includes non-exposed (weekend) days and that the total number of days exposed was 18 days (4 workweeks + 2 days) rather than 30 days.	POD: 626 mg/m3 (LOAEC, liver effects) (153 ppm) 0, 153, 304, 455 ppm (in air, water, or food)	In a well-designed, largely mechanistic study with the aim of identifying mechanism of action of disulfiram-induced sensitivity to 1,2-dichloroethane hepatotoxicity, rats were exposed to 1,2-dichloroethane via inhalation at 153, 304, or 455 ppm. Apical endpoints assessed included liver weight and serum liver enzymes (ALP, SDH, and 5'-NT). Mechanistic endpoints assessed included hepatic reduced glutathione, hepatic protein content, and hepatic cytochrome p450, hepatic GST activity, and hepatic DNA content. A mechanistic LOAEC of 153 ppm (626 mg/m3) was established based on liver effects (cytochrome p450 alterations), which is reported as the study-wide POD on Form 2d above. An apical NOAEC of 304 ppm (1243 mg/m3) was established based on liver effects (increased liver weights and serum enzyme 5'-NT alterations). No changes in hepatic GST activity, hepatic DNA content, or serum enzymes ALT or SDH were observed at any concentration. The concentration for the study-wide POD is converted from ppm to mg/m3 using the equation [(ppm * mw)/24.2 = mg/m3], where mw = molecular weight of the chemical (133.4 g/mol), and 24.2 = molar volume at 1 atm and 22°C.	None identified.	Hepatic/Liver: High	Igwe et al. 1986 200387
The protocol was approved by the Scientific Research Committee of China Medical University. Mouse; albino; Female	Inhalation: Vapor 3.5 hours/day 3 days	POD: 1200 mg/m3 (LOAEL, brain) 0, 1200 mg/m ³	See footnotes for full summary ⁴	Static inhalation chamber used making this study unacceptable.	Neurological/Behavioral, Mortality, Nutritional/Metabolic, Clinical signs: Uninformative	Jin et al. 2018 5557200

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
"This study was conducted in accordance with the National Institutes of Health guidelines in a manner that minimized animal suffering and animal numbers and has been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals." Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day 3 days	POD: 1030 mg/m³ (LOAEL, neuro) 0, 1.2g/m ³	See footnotes for full summary ⁵	Static inhalation chamber was used.	Neurological/Behavioral, Mortality: Uninformative	Jin et al. 2018 5431556
Adherence to a guideline was not specified. Mouse; Albino Kunming; Female	Inhalation: Vapor 3.5 hours/day 3 days	POD: 1.00 g/m³ (LOAEL, brain) 0, 1g/m ³	See footnotes for full summary ⁶	Major limitations included the use of an inappropriate method for generating and administering the test substance (static chamber) and an overall lack of reporting (missing measured test substance concentrations for each study group, a failure to report the number of animals per study group, and missing respiratory rates).	Neurological/Behavioral: Uninformative	Jin et al. 2019 5431770

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The Guide for the Care and Use of Laboratory Animals that were approved by the China Animal Care and Use Committee. Maximal care was taken to minimize the number of animals being sacrificed and their sufferings. Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 6 hours/day 5 days	POD: 1,362 mg/m³ (NOAEL, body weight, renal) (333 ppm) 0, 333, 577, 1000 ppm (in air, water, or food)	See footnotes for full summary ⁷	Study did not provide any detail regarding the inhalation chamber used.	Nutritional/Metabolic, Renal/Kidney: Uninformative	Li et al. 2015 4492694
Experiments were approved by the Southern Medical University Scientific Research Committee on Ethics in the Care and Use of Laboratory Animals (Permit No. L2019037). Mouse; Swiss - [mouse]; Male	Inhalation: Aerosol 6 hours/day 7 days/week 28 days	POD: 100 mg/m³ (NOAEC for increased vacuolization and apoptosis in cerebral cortex) 0, 100, 350, 700 mg/m ³	See footnotes for full summary ⁸	Respiratory rate was not measured for this respiratory irritant. Insufficient details were provided for the generation of the test atmospheres. Aerosol MMAD and GSD were not reported.	Neurological/Behavioral: High	Liang et al. 2021 10065280

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
non guideline, non GLP Mouse; CD-1 - [mouse]; Male	Oral: Gavage 14 days	POD: 4.9 mg/kg/d (LOAEL, immune suppression: reduced leukocytes, reduced humoral immunity) 0, 4.9, 49 mg/kg-bw/day	CD-1 mice (10-12/sex/group) were administered 1,2 dichloroethane at doses of 0, 4.9, 49 mg/kg by oral gavage for 14 days. Endpoints evaluated include body weight, hematology, gross necropsy, organ weights (liver, spleen, lungs, thymus, kidney, and brain), humoral immunity, and cell mediated immunity. No effects were observed on liver weight or hepatic clinical chemistry parameters. No changes in body weight were reported. No effect on organ weights or in clinical chemistry parameters were noted. Decreased leukocytes (30%) were reported at 49 mg/kg/day. Antibody forming cells/spleen showed a dose dependent trend towards immune suppression with 25% and 40% suppression at 4.9 and 49 mg/kg/day, respectively. Cell mediated immune response was suppressed at both doses.	No major limitations identified	Im-mune/Hematological: High, Hep-atic/Liver: High	Munson et al. 1982 62637
Animal experiments were conducted under the principles of proper laboratory animal care (Canadian Council on Animal Care) and approved by the ethical committee of the Guangzhou Center for Disease Control and Prevention (Guangzhou, China). Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 6 hours/day 5 days	POD: 1,361 mg/m3 (NOAEL, liver) (333 ppm) 0, 333, 577, 1000 ppm (in air, water, or food)	See footnotes for full summary ⁹	It is unclear how many animals were treated and/or evaluated per group. The type of inhalation chamber used is not reported. Cited reference also does not report the type of chamber.	Hepatic/Liver: Uninformative	Pang et al. 2018 4697150

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines. The study cites FREE, H. M., and FREE, A. H. (1961). Micro-urinalysis in small animals. Proc. Intern. Congr. Biochem. 5th, Moscow, 1961 p.520. Macmillan (Pergamon), New York. Mouse; Swiss - [mouse]; Male	intraperitoneal 3 days/week 5 days Three times, every other day.	POD: 500 mg/kg/day (NOAEL, renal dysfunction) 0, 0.4ml/kg	The density of 1,2-Dichloroethane is 1.25 g/ml. Doses were converted using the following formula: density (g/ml) * ml/kg administered = mg/kg. 1250 mg/ml * 0.4 ml/kg = 500 mg/kg. POD corresponds to a TWA of 300 mg/kg/day. Male Swiss mice (5/group) were administered 0.4 ml/kg of 1,2-dichloroethane (500 mg/kg) intraperitoneally every other day for 3 times. 48 hours after last injection, urine was analyzed (via Combistix test strip) and kidney histology was evaluated. Urine analysis was not reported. Slight kidney damage was seen in 1/5 mice (<50% of proximal tubule area was swollen or necrotic).	Only one dose studied. Negative controls were not run concurrently.	Renal/Kidney: Uninformative	Plaa and Larson 1965 64411
"This report has been reviewed by the Health Effects Research Laboratory, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily"	Inhalation: Vapor 3 hours/day 5 days/week 5 days 1h post final exposure, mice inhaled aerosolized streptococci or klebsiella	POD: 9.21 mg/m3 (2.3 ppm) (NOAEL in mice, immune: based on increased mortality from streptococcal infection and decreased bactericidal activity at 5 ppm) 0, 2.3, 5.4, 10.8 ppm (in air, water, or food)	Mice (140/group) were exposed to the test substance at doses of 0, 2.3, 5.4, or 10.8 ppm (measured) (corresponding to 9.21, 21.6, and 43.3 mg/m3; calculated using MW= 96.95) for 3h/day for 5 consecutive days. One hour after the final exposure, animals inhaled aerosolized streptococci and were observed for 14d or Klebsiella (aerosolized) and the percent of Klebsiella killed was evaluated. Alveolar macrophages cell counts and phagocytosis were evaluated and lymphocytes from lung associated lymphnodes were used for in vitro stimulation assay. After a single 3h exposure, mice exhibited increased mortality from streptococcal challenge at 5 and 10 ppm. No effect was observed at 2.5 ppm either after a single 3 h exposure or 3h/day for 5 days. A 3h exposure to 10 ppm showed decreased bactericidal activity. No effects were observed in cell counts from pulmonary lavage or phagocytic activity of alveolar macrophages. Increased leucine aminopeptidase (LAP) activity was observed after a 3h single exposure to 10 ppm.	No major limitations	Immune/Hematological: High	Sherwood et al. 1987 200590

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
non-guideline Rat; Sprague-Dawley - [rat]; Male	Inhalation: Vapor 5 hours/day 5 days/week 12 days 100 and 200 ppm for 5h single exposure, 10, 20, 50, and 100 ppm for repeated short term. 1h post final exposure, rats inhaled aerosolized streptococci or klebsiella	POD: 801.2 mg/m3 (200 ppm) (NOAEL, in rats based on no immune effect at the highest dose) 0, 10, 20, 50, 100, 200 ppm (in air, water, or food)	Rats (number/group not reported) were exposed to the test substance at doses of 0, 10, 20, 50, 100 or 200 ppm (nominal) (corresponding to 40.1, 80.1, 200.3, 400.6, and 801.2 mg/m3; calculated using MW= 96.95) for 3h (once) or 5 hours/day, 5 days/week for 12 days. One hour after the final exposure, animals inhaled aerosolized streptococci and were observed for 14d or Klebsiella (aerosolized) and the percent of Klebsiella killed was evaluated. Alveolar macrophages cell counts and phagocytosis were evaluated and lymphocytes from lung associated lymphnodes were used for in vitro stimulation assay. No effects were observed on mortality, bactericidal activity, alveolar macrophage counts or enzyme activity or lymphocytes.	No major limitations	Im-mune/Hematological: High	Sherwood et al. 1987 200590
The study pre-dates OECD guidelines and use of GLP practices. Rat; Wistar - [rat]; Both	Inhalation: Vapor 7 hours/day 2 days The text indicates animals were given "two and three" exposures, but results do not distinguish between these two durations.	POD: Not determined 0, 400 ppm (in air, water, or food)	Rats (20/sex) were exposed to a 1,2-dichloroethane vapor concentration of 400 ppm for 2 and 3 days. A group of unexposed animals were kept in a separate room during exposure. The study reports that exposed animals exhibited rapid bodyweight loss and slight increases in liver and kidney weights (no further details) Cloudy swelling of the liver with a few fat vacuoles was also noted. Female rats had a slight increase in total lipid content in the liver. No significant differences in blood urea nitrogen, non-protein nitrogen, serum phosphatase, and plasma prothrombin clotting time were observed. No data were provided for an independent view. It is unclear whether effects were observed in animals exposed for 2 days, 3 days, or both. NOAEC and LOAEC values were not determined.	This study was deemed unacceptable due to limited study details, the use of improper controls (untreated vs. air-only), and insufficient data reporting.	Hepatic/Liver: Uninformative, Mortality: Uninformative, Nutritional/Metabolic: Uninformative, Renal/Kidney: Uninformative	Spencer et al. 1951 62617

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines and use of GLP practices. Guinea pig; Not specified; Both	Inhalation: Vapor 7 hours/day 3 days The text indicates animals were exposed for 1, 3, 4, and 10 days, but results do not distinguish between these durations and therefore each of these durations is included in this form.	POD: Not determined 0, 400 ppm (in air, water, or food)	Groups of eight male and eight female guinea pigs were subjected to repeated seven-hour exposures to 400 ppm. These animals experienced such severe intoxication that no male guinea pig survived more than 10 exposures in 14 days and no female survived more than 24 exposures in 32 days. Additional groups of male guinea pigs (2/group), were exposed to 400 ppm 1,2-dichloroethane vapors 7hrs/day for 1, 3, 4, and 10 days. A separate group of unexposed animals were kept in a separate room during the study. Experimental animals were reported to show rapid bodyweight loss, and increased liver and kidney weights, compared with unexposed controls. Histopathological examinations indicated slight to moderate central fatty degeneration of the liver and slight-to-moderate cloudy swelling of the tubular epithelium (data not provided, no further details). The only quantal data provided was an average nonprotein blood nitrogen concentration of 91.6 mg/100cc and BUN value of 42.8 mg/100cc in exposed animals (exposure group/duration not specified) compared with an average of 61.6 mg/100 cc and 20.2 mg/100cc in controls (significance was not indicated). Results for individual exposure durations were not reported. A NOAEC or LOAEC were not reported.	This study was deemed unacceptable due to overall limited study details, a small number of animals (only 2 males/group), the use of improper controls (untreated vs. air-only), and insufficient data reporting.	Hepatic/Liver: Uninformative, Nutritional/Metabolic: Uninformative, Renal/Kidney: Uninformative	Spencer et al. 1951 62617

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
All animal studies had been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals and conducted in accordance with Chinese National Guidelines for the Care and Use of Laboratory animal in animal experiments. Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day 10 days	POD: 225 mg/m3 (NOAEL, hepatic enzymes) 0, 0.225, 0.45, 0.9g/m3	Mechanistic POD: 225 mg/m3 (NOAEL, hepatic enzymes)Apical POD: 450 mg/m3 (NOAEL, liver)Female Kunming albino mice (8/group) were exposed to 0, 225, 450 or 900 mg/m3 of 1,2-dichloroethane for 10 days (3.5 hours/day) via a static inhalation chamber. One day after final exposure mice were sacrificed. Endpoint evaluated included mortality, clinical signs of toxicity, body weight, serum ALT and AST, liver weight and levels of CYP2E1, nonprotein sulfhydryl (NPSH), superoxide dismutase (SOD) and malondialdehyde (MDA) in the liver. No mice died during the study. No clinical signs of toxicity were observed except for in the 0.9 mg/m3 group that showed incoordination of gait upon removal from the exposure chamber (data not quantified). Terminal body weights were not different between the groups (data not shown). Serum ALT levels were significantly increased at 900 mg/m3 (24%) compared to control. No significant changes in serum AST levels were seen (trended upward with higher concentrations). Absolute and relative liver weights did not differ between groups (data not shown). Hepatic CYP2E1 protein level and enzymatic activity were significantly increased at ≥ 450 mg/m3 compared to control. Significant decreases in hepatic NPSH (15%) were seen at 450 and 900 mg/m3 and SOD at 900 mg m3 (20%). MDA levels were significantly increased at 900 mg/m3 (63%) compared to controls. These data suggest oxidative damage was occurring at 900 mg/m3 in the liver.	Test substance was delivered using a static inhalation chamber.	Hepatic/Liver: Uninformative	Sun et al. 2016 4451633

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
All animal studies had been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals and conducted in accordance with Chinese National Guidelines for the Care and Use of Laboratory animal in animal experiments. Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day 10 days	POD: 900 mg/m3 (LOAEL, hepatic) 0, 0.9g/m3	Apical POD: 900 mg/m3 (LOAEL, hepatic). Mechanistic POD: 900 mg/m3 (LOAEL, hepatic enzymes). Female Kunming albino mice (8/group) were administered saline via gavage for 10 days prior to exposure (control of other experiments). Mice were then exposed to 0 or 900 mg/m3 of 1,2-dichloroethane for 10 days (3.5 hours/day) via a static inhalation chamber. One day after the final exposure mice were sacrificed. Endpoint evaluated included serum ALT and AST, and levels of CYP2E1, nonprotein sulfhydryl (NPSH), superoxide dismutase (SOD) and malondialdehyde (MDA) in the liver. Serum ALT levels were significantly increased 29% compared to control. No change in serum AST levels were seen. Hepatic CYP2E1 protein level and enzymatic activity were significantly increased compared to control. Significant decreases in hepatic NPSH (29%) and SOD (18%) were seen along with significant increases in MDA (34%) compared to control, suggesting oxidative damage in the liver. Study also investigated the impact the treating mice with diallyl sulfide (DAS; an inhibitor of CYP2E1) before exposure. DAS pretreatment provided protection from effects of test substance.	Test substance was delivered using a static inhalation chamber.	Hepatic/Liver: Uninformative	Sun et al. 2016 4451633
This study protocol has been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals and was carried out in accordance with the National Institutes of Health guidelines in a manner that minimized animal suffering and animal numbers. Mouse; Not specified; Female	Inhalation: Vapor 3.5 hours/day 10 days	POD: 225 mg/m3 (LOEAL, mechanistic) 0, 0.225, 0.45, 0.9g/m3	See footnotes for full summary ¹⁰	Study used a static chamber for delivery of test substance. Strain of mice was not reported.	Neurological/Behavioral: Uninformative	Wang et al. 2013 1522109

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study protocol has been approved by the Scientific Research Committee of China Medical University on Ethics in the Care and Use of Laboratory Animals, and was carried out in accordance with the National Institutes of Health guidelines in a manner that minimized animal suffering and animal numbers. Mouse; Kunming albino; Female	Inhalation: Vapor 3.5 hours/day 3 days	POD: 1100 mg/m³ (NOAEL, neuro) 0, 1.1, 1.2, 1.3g/m ³	Female Kunming albino mice (n=10) were exposed to 0, 1100, 1200 or 1300 mg/m ³ of 1,2-dichloroethane for 3 days (3.5 hours/day) in a static inhalation chamber. Endpoints evaluated included mortality, clinical signs of toxicity and brain weight, water content and histology. Mortality rates were 0, 30 and 60% for the 1100, 1200 and 1300 mg/m ³ groups respectively (control data not reported). Body tremors and forelimb flexure were observed at ≥ 1200 mg/m ³ and not seen in the control group (data not quantified). Brain weights were not significantly different between the groups. Water content of the brain was significantly increased (~2%) at ≥ 1200 mg/m ³ compared to control. Histologically, changes in the brain morphology were observed at ≥ 1200 mg/m ³ indicative of brain edema (enlarged perinuclear spaces, widened lacunar spaces surrounding vessels, lightly stained cytoplasm and swelling cell body). These histological changes were absent or rare in the control and 1100 mg/m ³ group.	Study used a static inhalation chamber to deliver test substance.	Neurological/Behavioral, Mortality: Uninformative	Wang et al. 2014 4453007
"It was conducted according to NIH guidelines concerning the protection and control of animals" Mouse; Swiss - [mouse]; Male	Inhalation: Aerosol 6 hours/day 7 days/week 28 days Analytical concentrations reported above. Target concentrations were 0, 350, and 700 mg/m ³ 1,2-DCE	POD: 350 mg/m³ (LOAEL, liver) 0.27, 363.6, 731.1 mg/m ³	In a study evaluating the role of aberrant miRNA expression in liver toxicity induced by 1,2-dichloroethane, groups of 10 male NIH Swiss mice were exposed to concentrations of 0, 350, or 700 mg/m ³ for 6 hours/day for 28 consecutive days. Body weight was significantly reduced at 700 mg/m ³ . Relative liver weight, and liver concentrations of glycogen, triglycerides, and free fatty acids were significantly increased at both exposure concentrations. In addition, serum AST, triglycerides, and free fatty acids were increased, and serum glucose decreased at both exposure concentrations. Serum ALT was increased at 700 mg/m ³ . miRNA analysis of control and high exposure animal livers showed upregulation of mmu-miR-451a. In vitro experiments exploring the role of this miRNA and the 1,2-dichloroethane metabolite 2-chloroacetic acid on gluconeogenesis were also conducted.	Missing details of stability, aerosol generation method, storage conditions, chamber designs, animals/chamber, and particle sizes. Respiratory rate was not reported.	Hepatic/Liver, Nutritional/Metabolic: High	Zeng et al. 2018 5555689

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
"The studies were conducted in accordance with the Chinese National Guidelines for the Care and Use of Laboratory Animals." Mouse; Kunming; Female	Inhalation: Aerosol 3.5 hours/day 3 days Exposed for 3.5 hr/day for 3 consecutive days	POD: 1000 mg/m³ (LOAEL, mechanistic); 1000 mg/m³ (NOAEL, brain) 0, 1000 mg/m ³	In a study assessing the effects of combined exposure to 1,2-dichloroethane and ethanol on brain damage, groups of 10 female Kunming mice were exposed in a static chamber for 3 consecutive days to 1,2-dichloroethane at 0 or 1000 mg/m ³ on 3.5 hours per day, with or without 6 daily gavage administrations of ethanol. In the group exposed only to 1,2-dichloroethane, there were no changes in behavior, brain weight or histopathology, or oxidative stress endpoints (NPSH, MDA, SOD) in the brain. A few mechanistic endpoints in the brain were affected by exposure to 1,2-dichloroethane alone: increased CYP2E1, NRF2, and heme oxygenase mRNA expression; and increased heme oxygenase and glutathione reductase protein expression.	Not clear whether vapor or aerosol; selected aerosol because concentration was reported in mg/m ³ . Brief duration (3 d), brief exposure (3.5 hr/d), one exposure level (1000 mg/m ³), static chamber, no changes in apical endpoints.	Neurological/Behavioral, Mortality: Uninformative	Zhang and Jin 2019 5556105
The study protocol was approved by the Scientific Research Committee of the Guangdong Provincial Hospital for Occupational Disease Prevention and Treatment (GDHOD) on Ethics in the Care and Use of Laboratory Animals (Permit No. 2014-03). It was conducted according to the NIH guidelines concerning the protection and control of animals. Mouse; Swiss - [mouse]; Male	Inhalation: Vapor 6 hours/day 7 days/week 4 weeks	POD: 707 mg/m³ (NOAEL, genotox) 0.3, 102.7, 356.04, 707.1 mg/m ³	Genotoxicity was evaluated with the Comet assay. Sexually mature male NIH Swiss mice (15/group) were exposed to 0, 102, 356 or 707 mg/m ³ 1,2-dichloroethane for four weeks (6 hours/day) via whole body inhalation. Mice were sacrificed 24 hours after the last exposure. Sperm was collected from the epididymis and evaluated for DNA damage via Comet assay. No significant differences were found in the average of values of oliver tail moment and tail DNA%, or the frequencies in positive oliver tail moment or tail DNA% across groups.	No Major limitations	Genotoxicity: Uninformative	Zhang et al. 2017 4453049

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study protocol was approved by the Scientific Research Committee of the Guangdong Provincial Hospital for Occupational Disease Prevention and Treatment (GDHOD) on Ethics in the Care and Use of Laboratory Animals (Permit No. 2014-03). It was conducted according to the NIH guidelines concerning the protection and control of animals. Mouse; Swiss - [mouse]; Male	Inhalation: Vapor 6 hours/day 7 days/week 1 weeks	POD: 100 mg/m³ (NOAEL, testicular genes/proteins) 0, 100, 350, 700 mg/m ³	See footnotes for full summary ¹¹	No Major limitations	Reproductive/Developmental: High	Zhang et al. 2017 4453049
The study protocol was approved by the Scientific Research Committee of the Guangdong Provincial Hospital for Occupational Disease Prevention and Treatment (GDHOD) on Ethics in the Care and Use of Laboratory Animals (Permit No. 2014-03). It was conducted according to the NIH guidelines concerning the protection and control of animals. Mouse; Swiss - [mouse]; Male	Inhalation: Vapor 6 hours/day 7 days/week 4 weeks	POD: 102.7 mg/m³ (LOAEL, altered testicular enzyme/proteins) 0.3, 102.7, 356.04, 707.1 mg/m ³	See footnotes for full summary ¹²	No Major limitations	Reproductive/Developmental: High	Zhang et al. 2017 4453049

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study protocol was approved by the Scientific Research Committee of the Guangdong Provincial Hospital for Occupational Disease Prevention and Treatment (GDHOD) on Ethics in the Care and Use of Laboratory Animals (Permit No. 2014-03). It was conducted according to the NIH guidelines concerning the protection and control of animals. Mouse; Swiss - [mouse]; Male	Inhalation: Vapor 6 hours/day 7 days/week 1 weeks	POD: 350 mg/m³ (NOAEL, genotox) 0, 100, 350, 700 mg/m ³	Genotoxicity was evaluated with the Comet assay. Sexually mature male NIH Swiss mice (15/group) were exposed to 0, 102, 356 or 707 mg/m ³ 1,2-dichloroethane for one weeks (6 hours/day) via whole body inhalation. Mice were sacrificed 24 hours after the last exposure. Sperm was collected from the epididymis and evaluated for DNA damage via Comet assay. No significant differences were found in the average of values of oliver tail moment and tail DNA%, or the frequencies in positive oliver tail moment or tail DNA% across groups.	No Major limitations	Genotoxicity: Uninformative	Zhang et al. 2017 4453049

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non-guideline study, not GLP compliant Rat; Wistar - [rat]; Female	Inhalation: Vapor 4 hours/day 2 days Pregnant dams were exposed 4 hrs/day during GDs 7 and 8	POD: 25 mg/m³ (NOAEL, embryotoxicity) 0, 25, 250 mg/m ³	Pregnant Wistar rats (number not specified) were exposed to 1,2-Dichloroethane vapor concentrations of 0, 25 and 250 mg/m ³ for 4 hrs/day on GD 7 and 8. Embryos (12-17/group) were explanted on GD 9.5 and cultured for 44 hours in serum from untreated rats. Embryos were measured for yolk sac diameter, crown-rump and head length, number of somites, protein concentrations, and were assigned a morphologic development score. Significant decreases were observed in all of these endpoints, compared with controls, at 250 mg/m ³ . Embryos in the high-exposure group were reported to appear grossly normal, but there was a significant increase in open posterior neuropores. Table 9 in the study indicates that embryos exposed in utero to 25 mg/m ³ also had a significantly decreased morphologic score; however, the study text reports that no differences were found in the 25 mg/m ³ exposure group, compared to controls. A comparison of means (performed for this review; unpaired, 2-tailed T-test) indicates that the change does not reach statistical significance. Toxicity values were not provided by the study author. Based on the data, a NOAEL for embryotoxicity would be 25 mg/m ³ and a LOAEL would be 250 mg/m ³ . There is significant uncertainty in the study results due to the lack of exposure information.	This study is considered to be unacceptable due to the lack of details of the exposure methods.	Reproductive/Developmental: Uninformative	Zhao et al. 1997 77864
The authors state that the study "was conducted according to the Chinese National Institutes of Health guidelines concerning the protection and control of animals" but do not cite any specific guideline numbers. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Aerosol 8 hours/day 7 days/week 7 days Exposure for 8 hrs/day for 7 consecutive days in a nose-only, dynamic exposure chamber	POD: 555 mg/m³ (LOAEC, gene expression changes in the brain) 0.4, 555, 1699 mg/m ³	See footnotes for full summary ¹³	Reporting deficiencies (lack of details on atmosphere generation, no particle size, MMAD or GSD information) introduce uncertainty in the accuracy of the reported exposure concentrations. The study did not measure respiratory rates in animals exposed to a respiratory irritant.	Neurological/Behavioral, Nutritional/Metabolic: High	Zhong et al. 2020 7697643

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Isomer: 1,2-Dichloroethane - Short-term (>1-30 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors state that the study "was conducted according to the Chinese National Institutes of Health guidelines concerning the protection and control of animals" but do not cite any specific guideline numbers. Mouse; CD-1 - [mouse]; Male	Inhalation: Aerosol 6 hours/day 7 days/week 28 days Exposure used a whole-body, dynamic exposure chamber	POD: 388.11 mg/m3 (NOAEC, brain water content) 0.35, 124.57, 388.11, 781.47 mg/m ³	See footnotes for full summary ¹⁴	Reporting deficiencies (lack of details on atmosphere generation, no particle size, MMAD or GSD information) introduce uncertainty in the accuracy of the reported exposure concentrations. The study did not measure respiratory rates in animals exposed to a respiratory irritant.	Neurological/Behavioral: High	Zhong et al. 2020 7697643
Non-guideline study; GLP not specified Mouse; CD-1 - [mouse]; Male	Inhalation: Aerosol 6 hours/day 7 days/week 28 days Males were exposed 6 hrs/day, 7 days/week for 28 consecutive days.	POD: LOEC: 100 mg/m3; protein dysregulation (proteomic changes) 0, 100, 350, 700 mg/m ³	See footnotes for full summary ¹⁵	Respiratory rates were not reported (test substance is a respiratory irritant). Details on the storage and preparation of the test substance were not provided. Insufficient details were provided for the generation of the test atmospheres. Aerosol MMAD and GSD were not reported.	Neurological/Behavioral: High	Zhong et al. 2022 10190107

* Overall Quality Determination

¹ 10609985: Female F344/DuCrI rats (28/group) were exposed to 0 or 205 ppm (approx. 832 mg/m³) of dichloroethane for 6 hours/day, seven days/week for at least 28 exposures (up to 31 days) via whole-body inhalation. Estrous stage was evaluated daily for approximately one week prior to the 28th exposure day. Rats were sacrificed immediately after exposure on the first diestrus after a minimum of 28 consecutive days of exposure. Endpoints evaluated included mortality (twice per day), cage-side and clinical observations (at least once per day), hands-on evaluation (conducted twice during the first week and weekly thereafter), body weights (weekly), food consumption (weekly), and serum prolactin levels. Mammary glands were evaluated for morphometry of mammary gland structure, cell proliferation (Ki-67; n=10/group), and histopathology (n=10/group). Other endpoints evaluated included measurement of reduced (GSH) and oxidized (GSSG) glutathione, DCE-glutathione conjugates S-(2-Hydroxyethyl)glutathione hydrochloride (HESG) and S,S'-Ethylenbis glutathione (EBG), DNA adducts 8-Hydroxy-2'-deoxyguanosine (8-OH dG) and S-(2- guanylethyl) glutathione (GEG) in mammary and liver tissue, and DNA damage (comet assay) in mammary tissue. Positive control included 3 animals administered N-Nitroso-N-methylurea (MNU via oral gavage 3 hours before sacrifice) as a positive control for Comet Assay, and 6 animals administered diethyl maleate via intraperitoneal injection two hours before necropsy as a positive control for depletion of glutathione in mammary and liver tissue. All animals survived the entirety of the experiment. No treatment related clinical signs of toxicity were observed. Body weights were within 10% of control throughout the study. A significant decrease in body weight gains were seen from day 1-15 (~25%) which correlated with decreased food consumption day 1-8 (~14%); however, gains and food consumption returned to control levels for the remainder of the study. No significant difference in serum prolactin levels were seen compared to control. No significant treatment-related difference in cell proliferation in the mammary gland duct, lobules, or terminal end buds, mammary gland morphology, or histology were seen compared to control. No significant difference in GSH/GSSG levels, cell proliferation or DNA damage (as assessed in comet assay) in mammary cells were seen. In the liver, exposed rats had significantly reduced levels of GSH (71.7%) and GSSG levels (62.1%) compared to control; the GSH/GSSG ratio however was not affected. No HESG or EBG conjugates greater than the lower limit of quantitation were measured in mammary or liver tissue in either group. A significant increase in GEG adducts were seen in the mammary gland (103 adduct/10⁶dG residues) and liver (222 adduct/10⁶ dG residues) compared to no GEG adducts in the control group in both tissues; study authors did not consider this related to mode of action, but more a biomarker of exposure. No treatment related changes in 8-OHdG levels were seen in mammary or liver cells compared to control. Positive controls gave expected responses. A NOAEL of 832 mg/m³ was determined based on lack of effect on mammary tissue, clinical signs and body weight. HERO ID 7697619 is a publication based on the data within this reference. Most information, including clinical observations, serum prolactin levels, mammary gland morphology and histopathology, and biomarkers of exposure is identical to the information contained in this reference. There are, however, 2 differences in data that cannot be explained, due to lack of raw data reporting in 7697619. First, the Comet Assay reports percentage tail DNA damage in controls to be 10.92%, in DCE-treated animals to be 15.20%, and in the MNU positive control to be 40.02% (whereas these percentages are reported as 24.62%, 22.72%, and 43.78% in this reference, respectively). This difference in data does not affect significance of findings or analysis. Second, the percentage of KI-67 labeled cells for mammary ducts, lobules, and TEB varies between both references, though this data is only presented in graphical format and the exact percentages are not otherwise reported. Mean values appear to vary slightly, less than 5% per finding, but error bars in 7697619 are noticeably wider. Again, this difference in data does not affect significance in findings or analysis.

- ² 10609985: Female F344/DuCrI rats (28/group) were exposed to 0 or 205 ppm (approx. 832 mg/m³) of dichloroethane for 6 hours/day, seven days/week for at least 28 exposures (up to 31 days) via whole-body inhalation. Estrous stage was evaluated daily for approximately one week prior to the 28th exposure day. Rats were sacrificed immediately after exposure on the first diestrus after a minimum of 28 consecutive days of exposure. Endpoints evaluated DNA damage (comet assay) in mammary tissue. Positive control included 3 animals administered N-Nitroso-N-methylurea (MNU) via oral gavage 3 hours before sacrifice) as a positive control for Comet Assay. No significant difference DNA damage (as assessed in comet assay) in mammary cells was seen compared to control. Positive controls gave expected responses. HERO ID 7697619 is a publication based on the data within this reference. Most information, including clinical observations, serum prolactin levels, mammary gland morphology and histopathology, and biomarkers of exposure is identical to the information contained in this reference. There are, however, 2 differences in data that cannot be explained, due to lack of raw data reporting in 7697619. First, the Comet Assay reports percentage tail DNA damage in controls to be 10.92%, in DCE-treated animals to be 15.20%, and in the MNU positive control to be 40.02% (whereas these percentages are reported as 24.62%, 22.72%, and 43.78% in this reference, respectively). This difference in data does not affect significance of findings or analysis. Second, the percentage of KI-67 labeled cells for mammary ducts, lobules, and TEB varies between both references, though this data is only presented in graphical format and the exact percentages are not otherwise reported. Mean values appear to vary slightly, less than 5% per finding, but error bars in 7697619 are noticeably wider. Again, this difference in data does not affect significance in findings or analysis.
- ³ 7697651: In a 28-day repeated-dose toxicity study, male CD-1 mice (20/group) were exposed via whole body inhalation to 1,2-dichloroethane (purity >99%) aerosol concentrations of 0 (filtered air control), 100, 350, or 700 mg/m³ for 6 hours/day for 28 days. Particle diameters were 1.02 µm in controls and 1.04-1.07 µm in the exposure groups. Mean measured concentrations were 0.25 (control), 114.02, 368.14, and 728.01 mg/m³, respectively. Body weights were obtained at the beginning of the study and weekly through the 28-day exposure period. Food consumption was measured and an open field test was conducted, but the timing of these measurements was not reported. At the end of the exposure period, 10 mice were transcardially perfused with 4% paraformaldehyde and histopathology was conducted on the cerebella; sections were also used for TUNEL staining to assess GCG⁺ apoptosis. Other sections were used for immunofluorescence using an anti-cleaved Caspase-3 antibody. The remaining 10 mice were sacrificed by cervical dislocation, cerebella were collected and used for RNA and protein extraction. No significant effects on body weight or food consumption were observed. During the open field test, slight body shaking, running in circles, decreased activity, slow movement, and fatigue were noted in mice treated at 350 mg/m³. Incidences were not reported, and it is unclear if there was statistical significance. It was also not noted whether animals in the 700 mg/m³ group exhibited similar behaviors. There were significant decreases in distance travelled, distance in the peripheral zones, average velocity, and locomotor activity were observed at 700 mg/m³. Resting time and distance in central zones increased in a dose-dependent manner, although no statistically significant changes were noted. Histopathological examination of cerebella revealed shrunken and hypereosinophilic cytoplasm with nuclear pyknosis in the 350 and 700 mg/m³ groups, with statistical significance at 700 mg/m³ only. Quantitative analyses of mouse cerebellar granular cell (CGC) apoptosis revealed significantly increased levels of apoptosis-positive CGCs at 700 mg/m³. Additionally, the expression levels of cleaved Caspase-3 protein, Caspase-3 mRNA, Cytochrome c mRNA and protein, and Bad mRNA and protein were significantly increased at 700 mg/m³. Bad mRNA expression was also significantly increased at 350 mg/m³. A trend towards increased mRNA and protein expression of Caspase-8 was also noted but without statistical significance. These findings were considered to indicate activation of the mitochondrial signalling pathway in contribution to the mechanisms inducing mouse CGC apoptosis. No author-reported toxicity values were provided; however, the authors concluded that behavioral changes and histopathology were observed at ≥350 mg/m³, suggesting a nominal NOEC and LOEC of 100 and 350 mg/m³, respectively (analytical values are 114.02 and 368.14 mg/m³). For mechanistic endpoints, a LOEC of 350 mg/m³ (368.14 mg/m³ analytical) was determined based on increased expression of Bad mRNA. An in vitro test in human cerebellum granular cells (HCGCs) and another repeated-dose inhalation study in rats with ADME endpoints were also conducted, but are not described within this evaluation.
- ⁴ 5557200: Female albino mice (number/group not reported) were exposed to 0 or 1200 mg/m³ of 1,2-dichloroethane in a static inhalation chamber for 3.5 hours/day up to 3 days. Mice were observed for mortality and clinical signs of toxicity and weighed daily. Mice were sacrificed 24 hours after last exposure. Interim sacrifices were also made on day 2 and 3. Brains were collected and the left hemisphere was weighed immediately (wet weight) and then dried for 48 hours (dry weight). Brain water content was calculated as [(wet weight- dry weight) / wet weight] x 100. Permeability of the blood brain barrier was studied by injecting 10% sodium fluorescein i.p. into mice and analyzing blood and brain fluorescein content after 20 minutes. Protein and RNA levels involved in several signaling pathways and transcription factors in the cerebral tissue were examined via Western Blot and Real-time PCR. Mortality rates in mice exposed for 3 days was reported to be nearly 25% (data were not shown). No mice died in the control group. Clinical signs of toxicity included body tremors and forelimb flexure in mice exposed for 2 and 3 days (data not shown). Voluntary exercise and food consumption was reported to be substantially decreased in these mice (data not shown). Terminal body weights were substantially decreased (15%) on day 4 compared to control (estimated from graphically presented data), however this may be due to the decreased food consumption noted. Significant increases in relative brain weight (4%, 10% and 11%) on day 2, 3 and 4 respectively, and water content (1.6% and 2.2%) on day 3 and 4 were seen compared to control (estimated from graphically presented data). Sodium fluorescein content in the brain was significantly increased after 2 and 3 days of exposure compared to control, suggesting a decrease in blood brain barrier integrity. The study studied the effects of a p38 inhibitor on signaling pathways and water content of brain. Water content of the brain decreased and body weight was increased in presence of p38 inhibitor. Exposure altered several gene and protein levels and may potentially be involved in brain edema.
- ⁵ 5431556: Apical POD: 1030 mg/m³ (LOAEL, neuro). Mechanistic POD: 1030 mg/m³ (LOAEL, mechanistic). Female Kunming albino mice (10/group) were administered 0.2 ml corn oil vial gavage (control for other experiments). Four hour later mice were exposed to 0 or 1030 mg/m³ for 3 days (3.5 hours/day) via whole body inhalation in a static chamber. Mice were sacrificed one day after the last exposure. Endpoints evaluated mortality, clinical signs of toxicity, body weight and brain weight, water content and histopathology. In the brain, levels of superoxide dismutase (SOD), malondialdehyde (MDA), non-protein sulfhydryl (NPSH) and tight junction proteins (ZO-1, occludin and claudin-5) were measured and protein and RNA levels of CYPE1 and oxidative stress markers (Nrf2 and HO-1). The mortality rate of treated mice was 25% for the 3 days (no mice in the control group died). Body tremor and forelimb flexure were observed after 2 days of exposure and became more severe by day 3. Body weights were significantly decreased on day 2 (~10%) and day 3 (~20%) of exposure compared to control (estimated from graphically presented data), although food consumption was also reduced (not quantified) and may have contributed to the loss of body weight. Edema was observed in the brains of treated mice, determined by a significant increase in percentage of brain water content (~3%) compared to control and morphological changes indicative of edema (enlarged perinuclear spaces, widened lacunar space surrounding vessels, swollen cell bodies in cerebral tissues). No pathological changes were seen in the cerebral tissue of control mice. Significant increases in brain CYP2E1 protein and mRNA levels were seen compared to control. MDA levels in the brain were significantly increased and NPSH levels were significantly decreased compared to control, indicating oxidative stress. Protein and mRNA levels of Nrf2 and HO-1 were significantly increased compared to control. SOD levels were not different from control. Tight junction proteins levels were significantly decreased compared to control. (Study also looked at effects of pretreating mice with diallyl sulfide before exposure)
- ⁶ 5431770: In an inhalation toxicity study, 3-4 week old female albino Kunming mice (number of animals/group not reported) were exposed to a time-weighted average concentration of 1.00-1.05 g/m³ 1,2-dichloroethane (1,2-DCE) via static inhalation exposure for 3.5 hours/day for 3 days. Animals in the control group were placed in an inhalation chamber without 1,2-DCE. The total number of animals per group was not disclosed by the study authors. Following the three-day exposure, all mice were sacrificed, and their brains were removed. The brains of five mice/group were used for determining brain water content, the levels of NF-kB DNA binding activity as determined by an electrophoretic mobility shift assay (EMSA), the levels of IL-1B in brain lysates (ELISA), protein levels (p-p38/p38, p-p65, p-IkB, GFAP, Iba-1, MMP-9, occludin, claudin 5, ZO-1, ICAM-1, VCAM-1, iNOS, IL-1B) (Western blot), and mRNA levels (Mmp9, Vcam1, Icam1, Nos2, IL1B) (RT-PCR). The remaining animals (number of animals unknown) in each group were used for histological observation and immunohistochemical analysis (VCAM-1, GFAP, Iba-1 expression) of the frontoparietal region of the cerebral cortex. Brain water content was significantly increased by ~2% in the 1,2-DCE-treated animals, as compared to

the controls. Histological observation revealed edema forming in the brains of mice exposed to 1,2-DCE. From immunohistochemical analysis it was determined that VCAM-1, GFAP, and Iba-1 expression were upregulated in the 1,2-DCE-treated group, as compared to the control group. In addition, NF- κ B DNA binding activity in the brain was dramatically increased with 1,2-DCE exposure (no statistics shown). The 1,2-DCE-treated group also exhibited an increased amount of IL-1B in brain lysates based on ELISA results (~50% increase). According to Western blot results, with 1,2-DCE exposure, protein levels of p-p38/p38, p-p65, p-I κ B, GFAP, Iba-1, MMP-9, ICAM-1, VCAM-1, iNOS, and IL-1B increased significantly in the brain, whereas protein levels of occludin, claudin 5, and ZO-1 decreased significantly in the brain. The 1,2-DCE-exposed animals also exhibited significantly increased mRNA levels of Mmp-9, Vcam1, Icam1, Nos2, and Il1b. No author-reported toxicity values were provided. Based on the data presented in the study, a LOAEL of 1.00 g/m³ 1,2-DCE was identified based on significantly increased brain water content and edema in the brain. The study also included groups pretreated with inhibitors against p38 MAPK, NF- κ B, MMP-9, and IL-1B receptor in order to study the signaling pathways leading to inflammation in the brain.

- ⁷ 4492694: Concentrations were converted using the formula (ppm * mw)/24.2 = mg/m³: (333 ppm * 98.96 g/mol)/24.2 = 1,362 mg/m³. Apical POD: 1,362 mg/m³ (NOAEL, body wt, renal). Mechanistic POD: 1,362 mg/m³ (NOAEL, oxidative stress) Male Sprague-Dawley rats were exposed to 0, 333, 577 or 1000 ppm (0, 1361, 2360 or 4123 mg/m³) of 1,2-dichloroethane for 5 days (6 hours/day) via whole body inhalation (details on inhalation chamber were not provided). Endpoints evaluated included body weight, blood urea and creatinine levels, and kidney weight, histology, immunohistochemistry (apoptotic cell), total antioxidant capacity, and levels of superoxide dismutase (SOD), glutathione and malondialdehyde. Terminal body weight were significantly decreased (7, 12 and 20%) at 333, 577 and 1000 ppm, respectively compared to control (estimated from graphically presented data). Relative kidney weights were significantly increased at ≥ 557 ppm but study did not report absolute kidney weights and this increase may be due to the decreased body weight. Blood urea levels were significantly increased at 1000 ppm (~ 8-fold) compared to control (estimated from graphically presented data). Blood creatine levels were not different between the groups. Histologically, kidney glomeruli were appeared normal in all groups. In the proximal convoluted tubules, slight intumescence (333 ppm) and mild atrophy (577 ppm) were observed. In the distal tubules, a great quantity of protein casts were present at 1000 ppm and a few at 577 ppm (representative photo, not quantitative data). Apoptotic cells were seen in the tubules at 1000 ppm but not at the other concentrations (data not quantified). Malondialdehyde levels were significantly increased and total antioxidant, superoxide dismutase and glutathione levels were significantly decreased at ≥ 557 ppm.
- ⁸ 10065280: Male Swiss mice (10/group) were exposed to 0 (clean air control), 100, 350, or 700 mg/m³ of 1,2-dichloroethane (1,2-DCA) aerosol (purity >99%) via whole-body inhalation 6 hours/day for 28 consecutive days. Mortality was monitored throughout the study period. Body weights were measured daily for the first week and then weekly thereafter. Urine was collected on day 28 to determine levels of metabolites. Brains from half of the animals (5/group) were weighed and used to analyze the expression of miRNAs (microarray), mRNA (microarray and qPCR), and proteins (Western blot) involved in apoptotic pathways. Brains from the other half of the animals (5/group) were collected following transcardial perfusion for histopathology (vacuolization area) and a TUNEL assay to detect apoptosis. At the end of the exposure period, urine was collected overnight to measure levels of 1,2-DCA metabolites. No mice died during the exposure. No significant differences in body weight were seen compared to controls, although terminal body weights in the 700 mg/m³ group trended downward. Relative brain weight was slightly, yet significantly increased at 700 mg/m³ compared with control. Absolute brain weights were not reported. The percent of vacuolization area in the cerebral cortex was significantly increased at 350 mg/m³ (40%) and 700 mg/m³ (65%) compared with controls. The percentage of apoptotic cells (TUNEL positive cells) in the cerebral cortex was significantly increased (2.5-fold and 8-fold) at 350 and 700 mg/m³, respectively. In addition, increases in expression of Caspase-3, cleaved Caspase 3, cytochrome c and Bax and downregulation of Bcl-2 at ≥ 300 mg/m³ support the suggestion that the mitochondrial apoptosis pathways are activated after exposure. Altered patterns of miRNA expression were primarily observed at 700 mg/m³ and various tools were used for target prediction. In vitro studies (not described here) were conducted to further investigate the pathways and potential targets of select miRNAs, with a focus on those involved in apoptosis. Urinary levels of the metabolite 2-chloroacetic acid were detected on day 28 and increased in a dose-related manner. A NOAEC of 100 mg/m³ and a LOAEC of 300 mg/m³ was identified based on increased vacuolization and apoptotic cells in the cerebral cortex. Separate in vivo toxicokinetic and in vitro experiments were included in the study report. These experiments were not included in the study evaluation.
- ⁹ 4697150: The study examined the potential liver toxicity of DCE in vitro and in vivo and, using both animal tests and HepG2 cells, to explore liver cell apoptosis. Concentrations were converted using the formula, (ppm * mw)/24.2 = mg/m³: (333 ppm * 98.96 g/mol)/24.2 = 1,362 mg/m³. Male Sprague-Dawley rats (number/group not reported) were exposed to 0, 333, 577 or 1000 ppm (0, 1362, 2359 or 4089 mg/m³, respectively) of 1,2-dichloroethane for 5 days (6 hours/day) via inhalation. Endpoints evaluated included body weight, serum albumin, total protein 1, ALT, AST, triglycerides and total cholesterol levels, liver weight, histology and presence of apoptotic cells and level of phospho-extracellular signal-regulated kinase 1/2 (ERK1/2) in the liver. Body weights were not reported. Absolute liver weights were not reported. Relative liver weights were significantly increased at 577 ppm (20%) and 1000 ppm (42%) compared to control (estimated from graphically presented data), however since body weight data is not reported, it is not possible to know if this is a result of decreased body weight. Significant increases in serum ALT (2.5- and 5-fold) and cholesterol (1.8- and 2.4-fold) were seen at 577 and 1000 ppm, respectively (estimated from graphically presented data). Serum AST (1.5-fold) and triglycerides (2-fold) were significantly increased at 1000 ppm compared to control (estimated from graphically presented data). Data on serum albumin and total protein 1 are not reported. Histological changes (liver cells were slightly broader and hyperplastic in the interlobular artery and vein in the portal area; liver cells also exhibited edema and denaturation and contained granulocytes and lymphocytes in the hepatic lobules) and increased apoptosis were observed in all treated groups (not control group), with the most obvious effect in the 1000 ppm group (data not quantified, representative photos shown). Decreased phosphorylation of ERK1/2 was seen in liver in a dose-related manner (data not quantified, Western blot shown).
- ¹⁰ 1522109: POD mechanistic: 225 mg/m³ (LOAEL, iNOS activities and glutamate levels) POD apical: 225 mg/m³ (NOAEL, locomotor activity, anxiety) Female albino mice (8/group) were exposed to 0, 225, 450 or 900 mg/m³ of 1,2-dichloroethane for 3.5 hours/day for 10 days in a static exposure inhalation chamber. Two hours after the last exposure behavior was examined in an open field test. After the test was completed, mice were sacrificed and brains removed to determine levels of malondialdehyde (MDA), nonprotein sulfhydryl (NPSH), superoxide dismutase (SOD) and inducible nitric oxide synthase (iNOS) activities, nitric oxide (NO), glutamate (Glu), aspartate (Asp) and gamma-aminobutyric acid (GABA) content. In the open field test, locomotor activity (number of line crossings) significantly decreased in a dose-dependent manner at ≥ 450 mg/m³ compared to control. The volume of feces and urine present were significantly increased at ≥ 450 mg/m³. Time in the center zone increased in a dose-related manner however the differences did not reach a level of significance from control. These data suggest exposure to ≥ 450 mg/m³ increased anxiety and decreased locomotor and exploratory activities in the mice. Vertical activity was significantly increased only at 225 mg/m³ but not at the higher concentrations, suggesting possible increased excitability at this dose, however the significance of this is unclear. Interestingly, GABA levels in the brain were significantly decreased at 225 mg/m³, but significantly increased at 900 mg/m³ compared to control. Significant increases in Glu levels (~33-40%) and iNOS activities (~33%) were seen at ≥ 225 mg/m³, NO levels at ≥ 450 mg/m³ (~38%) and SOD activities at 900 mg/m³ (23%). Nonprotein sulfhydryl and Asp levels were not different from control, MDA levels were only significantly increased at 225 mg/m³ (40%).
- ¹¹ 4453049: Apical POD: 350 mg/m³ (NOAEL, reproductive). Mechanistic POD: 100 mg/m³ (NOAEL, mechanistic). Sexually mature male NIH Swiss mice (15/group) were exposed to 0, 100, 350 or 700 mg/m³ 1,2-dichloroethane for one week (6 hours/day) via whole body inhalation. Mice were sacrificed 24 hours after the last exposure. Endpoints evaluated included mortality, clinical signs of toxicity, body weight, food consumption, plasma testosterone, luteinizing hormone (LH) and follicle-stimulating hormone (FSH) levels, testis and epididymis weight, histology on testis and epididymis, sperm count, motility and morphological analysis, testicular levels of testosterone, LH, FSH, gonadotropin-releasing hormone (GnRH), cyclic adenosine monophosphate (cAMP), protein kinase A (PKA), insulin-like growth factors (IGF-1), transforming growth factor- α (TGF- α) and protein phosphate (PP) and in the testis expression of genes and proteins involved in the synthesis of testosterone, the CREB/CREM signaling pathway and apoptosis. No mice died during exposure period. Body weight gains

and food consumption were not different between the group (data not shown). Absolute and relative testis weight were not different from control (data not shown). Epididymal weight was not reported. No change in plasma testosterone, LH, FSH or testis testosterone, LH, FSH, GnRH, cAMP, PKA, TGF- α , IGF-1 or PP were seen. In the testis, no difference in the diameter of seminiferous tubules or height of the germinal epithelium were seen compared to control. Significant decreases in sperm concentration (0.69-fold), motility (0.72-fold) and progressive motility (0.66-fold) were seen and significant increases in the sperm body abnormalities (4.44-fold) and total abnormalities (3.01-fold) were seen at 700 mg/m³ compared to control. The number of apoptotic cells in the testis was not different from control. Exposure altered the expression level of some genes and proteins involved in the synthesis of testosterone but not in a dose-related manner. Protein expression of CYP11A1 was significantly decreased at 700 mg/m³. Genes and proteins involved in apoptotic signaling were significantly decreased at ≥ 100 mg/m³ (FasL), significantly altered at ≥ 350 mg/m³ (Bcl-2, Fas and Bax) and significantly decreased at 700 mg/m³ (p53 and IRE1a). Expression of some genes and proteins involved in CREB/CREM signaling pathway were significantly decreased at ≥ 350 mg/m³ (CREB, TORC1, LDH-C, TESK1 and CREM) and at 700 mg/m³ (ACT).

- ¹² 4453049: Apical POD: 102 mg/m³ (NOAEL, reproduction). Mechanistic POD: 102 mg/m³ (LOAEL, enzyme/protein levels). Sexually mature male NIH Swiss mice (15/group) were exposed to 0, 102, 356 or 707 mg/m³ 1,2-dichloroethane for four weeks (6 hours/day) via whole body inhalation. Mice were sacrificed 24 hours after the last exposure. Endpoints evaluated included mortality, clinical signs of toxicity, body weight, food consumption, plasma testosterone, luteinizing hormone (LH) and follicle-stimulating hormone (FSH) levels, testis and epididymis weight, histology on testis and epididymis, sperm count, motility and morphological analysis, testicular levels of testosterone, LH, FSH, gonadotropin-releasing hormone (GnRH), cyclic adenosine monophosphate (cAMP), protein kinase A (PKA), insulin-like growth factors (IGF-1), transforming growth factor - α (TGF- α) and protein phosphate (PP) and in the testis expression of genes and proteins involved in the synthesis of testosterone, the CREB/CREM signaling pathway and apoptosis. No mice died during exposure period. Body weight gains was seen in the 707 mg/m³ group (-3.32g) compared to control (+3.24g) on day 28. Food consumption was not different between the groups. Absolute testis weights were not different between the groups but the relative testis weight in the 707 mg/m³ group was significantly higher (due to the decreased body weight, data not shown). Epididymal weight was not reported. Significant increases in plasma testosterone and LH, and testis testosterone, LH, GnRH and cAMP were seen at ≥ 356 mg/m³. Significant increases in abnormalities in the sperm head (2.6-, 6.37-fold), body (3.32-, 7.58-fold) tail (4.7-, 7.0-fold) and total (2.89-, 6.7-fold) were seen at 356 and 707 mg/m³, respectively. The diameter of the seminiferous tubules and height of the germinal epithelium was significantly decreased at ≥ 356 mg/m³. Significant increases in plasma testosterone (1.15-, 1.34-fold) and LH (1.17-, 1.43-fold) and testis testosterone (1.2-, 1.2-fold), LH (1.1-, 1.27-fold), GnRH (1.26-, 1.46-fold) and cAMP (1.2-, 1.3-fold) were seen at 356 and 707 mg/m³, respectively compared to control. Plasma and testis FSH levels were not different between the groups. The number of apoptotic cells in the testis was significantly increased at ≥ 356 mg/m³. Expression level of genes and proteins involved in the synthesis of testosterone, apoptosis and the CREB/CREM signaling pathway in the testis were significantly altered after exposure at ≥ 102 mg/m³. LH receptor levels were significantly increased at ≥ 102 mg/m³, CYP11A1 protein levels were significantly decreased at ≥ 356 mg/m³. The apoptotic signaling molecules Bax and FasL were significantly increased at ≥ 102 mg/m³; Bcl-2, p53, Fas, Caspase3, Bcl-2 were significantly altered at ≥ 356 mg/m³; and IRE1a was significantly decreased at 707 mg/m³. The CREB/CREM signaling pathway molecules CREB, TORC1 and LDH-C were significantly decreased at ≥ 102 mg/m³; and ACT, TESK1, LDH-C, CREM were significantly decreased at ≥ 356 mg/m³.
- ¹³ 7697643: In a short-term, 7-day inhalation toxicity study, male and female Sprague Dawley rats (16 or 20/sex/group) were exposed nose-only to 1,2-dichloroethane (1,2-DCE) (purity >99%) aerosol nominal concentrations of 0, 600, or 1,800 mg/m³ for 8hrs/day for 7 days. Mean measured concentrations were 0.4 (control), 555, and 1,699 mg/m³. The methods suggest that median mass aerodynamic diameters (MMADs) were measured, but no values were provided. The authors do not report monitoring the animals for mortality or for clinical signs of toxicity. Body weights were measured once daily each morning. Overnight urine was collected after each exposure to test for the presence of 1,2-DCE and its metabolites. At the end of the exposure period, the animals were anesthetized and terminated by cervical dislocation, and the cerebral hemispheres were collected. The left side was used for histopathology. The right side was used for biochemistry detections, specifically, qRT-PCR and Western blot analysis for assessing aquaporin 4 (AQP4) mRNAs and protein levels, and the expression of miRNA-29b, which directly regulates AQP4. Based on sample sizes for terminal endpoints, no animals died. Following exposure to 1,699 mg/m³ 1,2-DCE, a significant decrease in mean body weight and a significant increase in brain/body weight ratio was observed. Histopathological results were shown in representative figures. The study reported significant vacuolations in the brain parenchyma and cerebral cortex in both male and female rats in the 1,699 mg/m³ exposure group; as well as slight a pathological characterization of brain edema in female rat brains in the 555 mg/m³ group with no pathological changes occurring in controls. Incidences and statistical significance were not reported. AQP4 transcript levels were significantly decreased in males at ≥ 555 mg/m³, and in females at 1,699 mg/m³. Reductions in gene expression corresponded with decreased AQP4 protein levels in males and females exposed to 1,699 mg/m³. In all cases, fold mRNA and protein changes were small (<1 in all cases). AQP4 protein levels were negatively correlated with brain/body weight ratios in both sexes. Relative expression of miRNA-29b was increased in females at 1,699 mg/m³; there was an increase in both male exposure groups, but due to high variance was only significant in the 555 mg/m³ group. There was a negative correlation between miR-29b expression and AQP4 transcript levels in female rats. No author-reported toxicity values were reported. Based on the data provided, a mechanistic LOAEC of 555 mg/m³ was determined for this review for significant reductions in AQP4 expression in male rats. Brain edema was also described in females at this level, but the statistical significance of that observation is unknown. The study adequately demonstrated correlations between mechanistic changes and apical effects, which were observed at higher exposures. Supporting in vitro experiments in AVG p12 cells were conducted to further investigate the relationships between miR-29b and AQP4 expression. In vivo ADME data were also collected; briefly, the urine of rats was collected to quantitatively assess internal levels of 1,2-DCE, and the 1,2-DCE metabolites chlorohydrin and chloroacetic acid.
- ¹⁴ 7697643: In a short-term, 28-day inhalation toxicity study, wild type and AQP4-knockout (KO) male CD-1 mice (11 or 13/group) were exposed whole-body to 1,2-dichloroethane (purity >99%) aerosol concentrations of 0, 100, 350, or 700 mg/m³ for 6hrs/day, 7 days/week for 28 days. Mean analytical concentrations were 0.35 (control), 124.57, 388.11, and 781.47 mg/m³. Additionally, AQP4 heterozygous mice were used for exposure quality control which monitored the internal 1,2-DCE concentrations in the blood during the exposure periods. The blood of AQP4-heterozygous mice in each exposure group was collected at four timepoints (before 1,2-DCE exposure, after 1 h and 6 h of exposure, and 1 h after stopping exposure), respectively. The authors do not report monitoring the animals for mortality or clinical signs of toxicity. Body weights were measured once daily each morning. At the end of the exposure period, the animals were anesthetized and terminated by cervical dislocation, and the cerebral hemispheres were collected. Five brains from each exposure group were used to determine brain weight and water content. The left side was used for histopathology. The right side was used for biochemistry detections, specifically, qRT-PCR and Western blot analysis for assessing aquaporin 4 (AQP4) mRNAs and protein levels, and the expression of miRNA-29b, which directly regulates AQP4. These results reported here are focused primarily on effects in WT mice. Based on sample sizes for terminal endpoints, no animals died and there were no significant changes in body weights of exposed WT mice, compared to their respective controls. There was a significant increase in the brain water content of mice in the 781.47 mg/m³ group. Histopathological analysis revealed significant vacuolations in the brain parenchyma following exposure to 781.47 mg/m³. Representative histopathological images of each exposure group were provided in the absence of quantitative incidence data or statistical significance. Both AQP4 mRNA and protein expression levels were significantly decreased also in mice exposed to 781.47 mg/m³. However, the fold-changes were small (0.63-fold and 0.80-fold for mRNA and protein, respectively), and they did not show a clear exposure-concentration-related response. Relative expression of miR-29b was significantly increased at ≥ 388.11 mg/m³ and was negatively correlated with AQP4 expression. No author-reported toxicity values were reported. For apical effects, a NOAEC of 388.11 mg/m³ and a LOAEC of 781.47 mg/m³ was determined, based on the significant changes in brain water content and the observance of brain histopathology in exposed WT mice. A mechanistic NOEC of 125.57 mg/m³ and a LOEC of 388.11 mg/m³ was determined based on the exposure-related up-regulation of miR-29b expression. The experiments using AQP4-KO mice generally showed that deletion of AQP4 intensifies 1,2-DCE-induced brain edema.
- ¹⁵ 10190107: In a mechanistic study with limited endpoints, male WT CD-1 and AQP4-KO mice (20/strain/group) were exposed, whole body, to 1,2-DCE (purity >99%) at concentrations of 0 (filtered air control), 100, 350,

or 700 mg/m³ for 6 hours/day for 20 consecutive days. The study methods claim that each experiment was conducted three times; it is unclear if this includes this 28-day inhalation study. Concentrations of 1,2-DCE in the exposure atmospheres were analyzed and TWA values were calculated. It was noted that the measured concentrations were similar to the nominal concentrations; however, numerical results were not provided. Means with error bars were graphically displayed and could be extracted from the figure if needed. Animals were observed for mortality. All animals were subjected to an open field test after the last exposure. Five mice/group were sacrificed to determine brain water content based on wet and dry brain weights. Brains were rapidly excised from an additional 10 mice/group weighed, and the tissues were frozen. The right side of the cortex was used for proteomic analysis. mRNA and protein were each extracted from half of the left cortex for gene expression analysis and Western blotting, respectively. The remaining 5 mice were anesthetized and perfused transcardially with paraformaldehyde prior to collection of brain samples for microscopic analysis. Specifically, brains were analyzed to determine the cortex and vacuolization ratios and to perform myelin sheath area analysis. Immunofluorescence was conducted on sectioned brain samples to detect aquaporin 4 (AQP4) or myelin basic protein (MBP) integral optical densities. No animal died during the study. Brain water content was significantly increased in WT mice at 700 mg/m³, compared with the WT controls. Water content did not differ between KO control and exposed mice. There were no changes in relative brain weights in either strain. Vacuolation area was enlarged in WT, but not AQP4-KO mice at ≥ 350 mg/m³, compared with WT controls. Multiple regression analysis showed that for water content and vacuolation area, there were significant interactions between 1,2-DCE levels and AQP4 deletion. When 1,2-DCE was used as the independent variable in a simple regression analysis, there was a concentration-dependent increase in water content and vacuolization area with 1,2-DCE levels. In open field tests, WT animals exposed to 700 mg/m³ showed significant reductions in total distance traveled, and at ≥ 350 mg/m³ there were significant reductions in the percentage of central/total distance, and the mean time spent in the apparatuses central area(s). These changes were concentration-related. No behavioral changes were observed in AQP4-KO mice exposed to 1,2-DCE. Speed was not impacted by exposure in any group. Transcript and protein levels of AQP4 were decreased in WT mice exposed to ≥ 350 mg/m³. Proteomic analysis showed differential protein expression in all WT exposure groups, compared with WT controls. Since 1,2-DCE down-regulates AQP4, there were some similarities between the protein changes in high exposure-level WTs and in AQP4-KO mice, when compared to WT controls. In particular, data suggests that 1,2-DCE exposure inhibits AQP4, which results in down-regulation of MBP and tyrosine-protein (FYN). Histological analysis showed significant demyelination in the cortex of WT mice exposed to ≥ 350 mg/m³, compared with WT controls. This was confirmed using immunofluorescence showing a concomitant decrease in AQP4 staining in astrocytes and MBP intensity in oligodendrocytes in mice exposed to 700 mg/m³. A NOAEC of 100 mg/m³ and LOAEC of 350 mg/m³ were determined for apical effects, based on neurotoxicity-related behavioral and histopathological changes. A mechanistic LOEC of 100 mg/m³ was identified based on proteomic changes in the brains of exposed male mice. This study also included separate toxicokinetics and in vitro experiments in immortalized human fetal glial SVG p12 cells and in the hybrid MO3.13 cells. These experiments aren't described here.

Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
no guideline Rat; Not specified; Female	Oral: Diet 5 weeks Animal diet was provided 2x daily for 1h in the day and 2h at night.	POD: 64 mg/kg/d (600 ppm) (NOAEL, no body weight changes) 0, 250, 500 ppm (in air, water, or food)	Female rats (18/group) were administered the test substance in the diet at doses of 0, 250, or 500 (corresponding to 32 and 64 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d) for 5 weeks. End-points evaluated include body weight. No effects on body weight were observed	Fumigation of food is an unusual method- steps were taken to prevent volatilization: limited time frames for feeding (1 h 2x day) and storage in sealed container for only 10 days.	Nutritional/Metabolic: Medium	Alumot et al. 1976 194588
no guideline Rat; Not specified; Male	Oral: Diet 13 weeks Diet was fed 2x a day for 1 h in the day and 2 h at night.	POD: 53 mg/kg/d (500 ppm) (NOAEL, no effect on body weight) 0, 250, 500 ppm (in air, water, or food)	Male rats (18/Group) were administered the test substance in the diet at doses of 0, 250, or 500 ppm (corresponding to 27 and 53 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d) for 13 weeks. Endpoints evaluated include body weight, clinical chemistry, and liver pathology. No effects were observed.	Fumigation of food is an unusual method of exposure. Steps were taken to prevent volatilization including limited time frames for feeding (2 daily limited feeding times of 1 hour in the day and 2 hours at night) and storage of the feed in a sealed container for 10 days.	Nutritional/Metabolic: Medium	Alumot et al. 1976 194588
None Rat; Sprague-Dawley - [rat]; Both	Oral: Gavage 7 days/week 13 weeks 90 days	POD: 37.5 mg/kg/day (NOAEL, liver, kidney, blood) 37.5, 75, 150 mg/kg-bw/day	In a 90-day gavage study, rats were treated with 1,2-dichloroethane at 0, 37.5, 75, or 150 mg/kg/day. Endpoints assessed included clinical signs and mortality, body weights, food and water consumption, ophthalmoscopic examination, urinalysis, hematology, clinical chemistry, limited organ weights and gross necropsy, and comprehensive histopathology. A NOAEL of 37.5 mg/kg/day was established based on liver effects in males (increased relative liver weight and ALP), nutritional/metabolic effects in males (increased relative brain weight, increased potassium, and decreased albumin), blood effects in males (decreased hemoglobin and hematocrit), and increased relative kidney weight in males and females. Effects at higher doses included liver effects in both males and females, decreased food consumption and body weight gain in males, and immune/hematological effects in both males and females.	None identified.	Immune/Hematological: High, Hepatic/Liver: High, Renal/Kidney: High	Daniel et al. 1994 62965
Non-guideline range-finding study; adherence to GLP was not specified. Rat; SPF; Both	Oral: Gavage 5 days/week 90 days Animals were dosed 5 days per week for 90 days.	POD: 30 mg/kg-day (NOAEL, increased relative liver and kidney weights) 0, 10, 30, 90 mg/kg-bw/day	See footnotes for full summary ¹	Some study details were limited and data were not reported with measures of variance.	Hepatic/Liver: Medium, Renal/Kidney: Medium	van Esch et al. 1977 1772372

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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 6 hours/day 5 days/week 6 weeks Animals (4 species) were exposed for up to 6 weeks; however, all rats died by week 2.	POD: 2020 mg/m3 (FEL, mortality) (500 ppm) 0, 500 ppm (in air, water, or food)	Sprague-Dawley rats (5/sex/group) were exposed to 1,2-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 6 weeks. The analytical concentration was 490 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). In addition, the lungs, heart, and adrenal glands were evaluated histologically. Nine of 10 rats died by week 1 and all rats died by week 2. Rats showed dyspnea. Histology revealed fatty degeneration and necrosis of the myocardium and liver, low-grade breath and hyperemia in the lungs, lipoid nephrosis, and lipoid storage in the adrenal glands (incidence and/or severity of these effects not reported). The concentration of 500 ppm was a FEL for mortality. This value was converted to 2020 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 2023.72 mg/m3, which was rounded to 2020mg/m3).	The study was an English translation of a German study. The concentration used was selected to compare the toxicity of 1,2-DCA and 1,1-DCA; however, it was too high for 1,2-DCA. The study was intended to be a 6-week trial, but all rats died by week 2. The methods indicated that a variety of endpoints were evaluated (see above), but owing to high mortality and limited reporting, it was not entirely clear that all parameters (such as clinical pathology) were evaluated. The study reported that rats showed dyspnea and a number of histological findings. The incidence and/or severity of these effects on the liver, kidney, lungs, heart, and adrenal glands were not reported and no statistical analyses were performed. The reporting of results was very limited (several endpoints not explicitly specified). It was not clear whether the animals lived long enough to observe effects on some of the measure endpoints. Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Mortality: Uninformative	Hofmann et al. 1971 1937626
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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rabbit; Bunte; Both	Inhalation: Vapor 6 hours/day 5 days/week 6 weeks Animals (4 species) were exposed for up to 6 weeks; however, 3 of 4 rabbits died by week 4 (after 10-17 exposures).	POD: 2020 mg/m3 (FEL, mortality) (500 ppm) 0, 500 ppm (in air, water, or food)	Bunte rabbits (2/sex/group) were exposed to 1,2-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 6 weeks. The analytical concentration was 490 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). In addition, the heart was evaluated histologically. Three of 4 rabbits died by week 4. The study reported that clinical-chemical examinations of rats revealed no pathological findings, especially with respect to liver and kidney function. Histology revealed cardiac dilatation (incidence and/or severity of this effect not reported). The concentration of 500 ppm was a FEL for mortality. This value was converted to 2020 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 2023.72 mg/m3, which was rounded to 2020mg/m3).	The study was an English translation of a German study. The concentration used was selected to compare the toxicity of 1,2-DCA and 1,1-DCA; however, it was too high for 1,2-DCA. The study was intended to be a 6-week trial, but 3 of 4 rabbits died by week 4. The methods indicated that a variety of endpoints were evaluated (see above), but owing to high mortality and limited reporting, it was not entirely clear that all parameters (such as hematology) were evaluated. The study reported that exposed rabbits showed cardiac dilatation. The incidence and/or severity of this effect were not reported and no statistical analyses were performed. The reporting of results was very limited (several endpoints not explicitly specified). It was not clear whether the animals lived long enough to observe effects on some of the measure endpoints. Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Mortality: Uninformative	Hofmann et al. 1971 1937626
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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Guinea pig; Pirbright-White; Both	Inhalation: Vapor 6 hours/day 5 days/week 6 weeks Animals (4 species) were exposed for up to 6 weeks; however, 9 of 10 guinea pigs died by week 3 (after 4-14 exposures).	POD: 2020 mg/m3 (FEL, mortality) (500 ppm) 0, 500 ppm (in air, water, or food)	Pirbright-White guinea pigs (5/sex/group) were exposed to 1,2-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 6 weeks. The analytical concentration was 490 ppm. The endpoints evaluated included mortality, body weights, liver effects (liver weight and liver histology), and renal effects (kidney weight and kidney histology). In addition, the heart and adrenal glands were evaluated histologically. Nine of 10 guinea pigs died by week 3. Body weight loss in exposed guinea pigs was noted. Histology revealed fatty degeneration and necrosis of the myocardium and liver, lipid nephrosis, and lipid storage in the adrenal glands (incidence and/or severity of these effects were not reported). The concentration of 500 ppm was a FEL for mortality. This value was converted to 2020 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 2023.72 mg/m3, which was rounded to 2020 mg/m3).	The study was an English translation of a German study. The concentration used was selected to compare the toxicity of 1,2-DCA and 1,1-DCA; however, it was too high for 1,2-DCA. The study was intended to be a 6-week trial, but 9 of 10 guinea pigs died by week 3. The study reported that exposed guinea pigs showed histological effects in the heart, liver, kidney, and adrenal glands. The incidence and/or severity of these effects were not reported and no statistical analyses were performed. The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Mortality: Uninformative	Hofmann et al. 1971 1937626

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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Cat; Not specified; Both	Inhalation: Vapor 6 hours/day 5 days/week 6 weeks Animals (4 species) were exposed for up to 6 weeks.	POD: Uninformative - not suitable for POD determination 0, 500 ppm (in air, water, or food)	Cats (2/sex/group) were exposed to 1,2-dichloromethane at 0 or 500 ppm for 6 hours/day, 5 days/week, for 6 weeks. The analytical concentration was 490 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). In addition, the heart was evaluated histologically. It was reported that all cats survived 30 exposures. The study reported that clinical-chemical examinations of rats revealed increased BUN. Histology revealed cardiac dilatation (incidence and/or severity of this effect not reported). Although effects were reported at 500 ppm, the biological and/or statistical significance of these effects were uncertain based on the limited information provided in the study report. The concentration of 500 ppm was converted to 2020 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 2023.72 mg/m3, which was rounded to 2020mg/m3).	The study was an English translation of a German study. The concentration used was selected to compare the toxicity of 1,2-DCA and 1,1-DCA (however, it was too high for 1,2-DCA for the other species tested in the study). The methods indicated that a variety of endpoints were evaluated (see above), but owing to limited reporting, it was not entirely clear that all parameters (such as hematology) were evaluated. The study reported that exposed cats showed increased BUN and cardiac dilatation. Data for these endpoints (including incidence and/or severity) were not reported and no statistical analyses were performed. The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); e) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Hepatic/Liver: Uninformative, Mortality: Uninformative, Renal/Kidney: Uninformative	Hofmann et al. 1971 1937626
N/A; 1943 study Rabbit; Not specified; Unknown	Inhalation: Vapor 6 hours/day 5 days/week 12 weeks 60 days One of the 2 exposed rabbits in the 1.99 mg/l group was exposed for 10 weeks (50 days). In a second experiment, 2 rabbits were exposed 4 mg/l, however, the exposure duration was not reported.	POD: 1.99 mg/L (LOAEL, neurological, gastrointestinal, respiratory) 0, 1.99, 4 mg chemical / L air	Clinical signs observed during exposure to 1.99 mg/L included labored respiration, muscle twitching, and diarrhea. Body weight gain was also reduced in this group. Mortality, tremors, twitching, drowsiness and muscular incoordination were observed at 4.0 mg/L.	Only 2 rabbits were exposed/group. The exposure duration varied for the 2 rabbits exposed to 1990 mg/m3 (10 or 12 weeks). Rabbits exposed to 4000 mg/m3 were not exposed concurrently. Limited outcomes were assessed (mortality, clinical signs, body weight).	Neurological/Behavioral, Gastrointestinal, Immune/Hematological, Mortality, Musculoskeletal, Nutritional/Metabolic, Lung/Respiratory: Uninformative	Kettering Laboratory 1943 4528351

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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None Rat; Osborne-Mendel - [rat]; Male	Oral: Gavage 5 days/week 7 weeks Promotion protocol	POD: No evidence of tumor promotion was observed at 100 mg/kg/day 0, 100 mg/kg-bw/day	Rats that had been subjected to partial hepatectomies were administered a single tumor initiating dose of diethylnitrosamine (or water) via i.p. injection. Six days later, animals began receiving 1,2-DCE at 100 mg/kg/day for 5 days/week for 7 weeks. One week later, the experiment was terminated and livers were examined histopathologically for GGT-positive foci. The incidence of foci was not increased in animals that received 1,2-DCE with or without diethylnitrosamine. No effects were observed on body weight, body weight gain, or absolute or relative liver weights.	The primary purpose of this study was to evaluate the tumor initiation and promotion potential of the chemical. Effects on body and liver weights were not the primary purpose of the study, and only minimal details are provided for these endpoints. The absence of effects on body and liver weights is implied but not explicitly stated.	Cancer/Carcinogenesis: High	Milman et al. 1988 200479
Non-guideline, no GLP Mouse; CD-1 - [mouse]; Both	Oral: Drinking water 24 hours/day 7 days/week 90 days	POD: 24 mg/kg/d (NOAEL, reduced body weight and serum hemagglutination titers observed at 189mg/kg/d) 0, 3, 24, 189 mg/kg-bw/day	CD-1 mice (16-24/sex/group) were administered 1,2 dichloroethane at doses of 3, 24, and 189 mg/kg in drinking water for 90 days. Endpoints evaluated include body weight, hematology, gross necropsy, organ weights (liver, spleen, lungs, thymus, kidney, and brain), humoral immunity, and cell mediated immunity. Reduced body weights were observed at 189 mg/kg/day in males. A dose dependent decrease in hemagglutination titers was observed, but did not reach statistical significance.	No major limitations identified	Im-mune/Hematological: Uninformative, Nutritional/Metabolic: Uninformative	Munson et al. 1982 62637
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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
NTP study, GLP compliance was not specified. Rat; Osborne-Mendel - [rat]; Both	Oral: Gavage 5 days/week 6 weeks Animals were gavaged 5 days per week for 6 weeks, followed by a 2-week recovery period.	POD: 40 mg/kg-day (LOAEL, decreased body weights) 0, 40, 63, 100, 150, 251 mg/kg-bw/day	In a preliminary dose-range finding study, Osborne-Mendel rats (5/sex/group) were administered 1,2-dichloroethane, via gavage in corn oil, at doses of 0 (vehicle control), 40, 63, 100, 159, and 251 mg/kg-day, 5 days per week for 6 weeks. At the end of dosing, animals were allowed to recover without treatment for an additional two weeks. Endpoints were limited to mortality and body weight measurements (frequency not specified). The goal was to identify a dose that would result in an approximate 20% reduction in mean body weight with no mortality; this dose would be selected as the initial high dose in a chronic study. No deaths were observed at 150 mg/kg-day. Three males and 1 female died at 251 mg/kg-day. Results for the other groups, including controls weren't reported. The body weights of high-dose males were depressed by 50% (presumably relative to controls). No significant changes in male body weights were observed in the other dose groups. Female body weights were decreased by 10%, 17%, and 32% at 40, 100, and 159 mg/kg-day. Significance was not specified and results for other groups were not reported. Based on the available information, 40 mg/kg-day is a suggested LOAEL based on the 10% reduction in female body weights in a study with limited endpoints. An accurate NOAEL cannot be determined.	This preliminary study was limited in scope, and insufficient details were provided to conduct an accurate assessment. No quantitative data were provided.	Nutritional/Metabolic: Medium, Mortality: Uninformative	NTP 1978 5441108

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Isomer: 1,2-Dichloroethane - Subchronic (>30-91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guidelines or compliance with GLP conditions were specified. Rat; Osborne-Mendel - [rat]; Both	Oral: Gavage 5 days/week 6 weeks Animals were gavaged 5 days per week for 6 weeks, followed by a 2-week recovery period.	POD: 40 mg/kg-day (LOAEL, decreased body weights) 0, 40, 63, 100, 150, 251 mg/kg-bw/day	In a preliminary dose-range finding study, Osborne-Mendel rats (5/sex/group) were administered 1,2-dichloroethane, via gavage in corn oil, at doses of 0 (vehicle control), 40, 63, 100, 159, and 251 mg/kg-day, 5 days per week for 6 weeks. At the end of dosing, animals were allowed to recover without treatment for an additional two weeks. Endpoints were limited to mortality and body weight measurements (frequency not specified). The goal was to identify a dose that would result in an approximate 20% reduction in mean body weight with no mortality; this dose would be selected as the initial high dose in a chronic study. No deaths were observed at 150 mg/kg-day. Three males and 1 female died at 251 mg/kg-day. Results for the other groups, including controls weren't reported. The body weights of high-dose males were depressed by 50% (presumably relative to controls). No significant changes in male body weights were observed in the other dose groups. Female body weights were decreased by 10%, 17%, and 32% at 40, 100, and 159 mg/kg-day. Significance was not specified and results for other groups were not reported. Based on the available information, 40 mg/kg-day is a suggested LOAEL based on the 10% reduction in female body weights in a study with limited endpoints. An accurate NOAEL cannot be determined.	This preliminary study was limited in scope, and insufficient details were provided to conduct an accurate assessment. No quantitative data were provided.	Nutritional/Metabolic: Medium, Mortality: Uninformative	NTP 1978 5441108

* Overall Quality Determination

¹ 1772372: Groups of SPF Wistar rats (10/sex/dose) were administered 1,2-DCE at doses of 0, 10, 30, and 90 mg/kg-day, 5 days/week for 90 days, via gavage in olive oil. An additional 8 males/group were included for clinical chemistry determinations at 4 and 8 weeks. Animals were monitored for mortality. Body weights and food intake were recorded at weeks 1, 2, 5, 9, and 12. Hematological measurements were conducted on the main group animals at the end of the dosing period. BSP retention time and SGPT activity were measured in 6/sex/group and AH and APDM activities (presumably in the liver) were measured in 6 males/group. The additional males were used to measure serum SGPT and ALP activities at 4 and 8 weeks. It is presumed that 4 males were sacrificed at each of these time points to also measure AH and APDM activities as well as triglyceride contents in the liver. Select organs of all animals were weighed and complete histopathological examinations were conducted on animals from the control and high-dose groups. The liver and kidneys were examined in animals from all dose groups. No deaths were mentioned in the results. Food intake was significantly increased in males during weeks 12/13, and in females during weeks 2 and 5. No body weight or weight gain changes were significantly different from controls, although there was a reported tendency for reduced growth in the 30 and 90 mg/kg-day groups. Hematological changes were limited to an increase in hematocrit levels in the 10 and 90 mg/kg-day females only and a reduction in the percentage of eosinophils at the high dose. Non-dose-related reductions in leucocyte counts in males and in the percentage of lymphocytes at 90 mg/kg-day were also noted. No changes in serum endpoints, BSP-retention time, or dose-related changes in liver enzymes or triglycerides were observed. High-dose females showed significant increases in relative liver (13%), kidney (16%), and brain weights. Relative kidney weights were also increased in males (17%) at 90 mg/kg-day. No histopathological changes associated with exposure to 1,2-DCE were observed. The authors noted uncertainty in the adversity of the organ weight changes, particularly in the absence of supporting liver enzyme changes or histopathology. The author reported NOEL was 30 mg/kg-day.

Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
no guideline Rat; Not specified; Male	Oral: Diet 3 hours/day 7 days/week 104 weeks Diet was fed 2x a day for 1 h in the day and 2 h at night.	POD: 42 mg/kg/day (500 ppm) (NOAEL, no effects on mortality, liver, or kidney) 0, 250, 500 ppm (in air, water, or food)	Male rats (18/group) were administered the test substance in the diet at doses of 0, 250, or 500 ppm (corresponding to 21 and 42 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d, chronic) for 104 weeks. Endpoints evaluated include survival, body weight, liver fat content, serum levels of cholesterol, ALT, AST, total protein, albumin, globulin, glucose, urea, uric acid. No fatty livers were observed in the treated groups and no alterations in clinical chemistry of liver or renal function were reported. No effect on survival was observed.	Animals were susceptible to chronic respiratory disease beginning at 14 months. Survival was reduced in all animals due the respiratory disease, unrelated to treatment.	Hepatic/Liver: Uninformative, Mortality: Uninformative, Renal/Kidney: Uninformative	Alumot et al. 1976 194588
No guideline was specified; adherence to GLP was not specified. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week 104 weeks Dose conversions were performed using the formula: (ppm* mw)/24.2= mg/m3. (50 ppm * 98.96 mg/mol)/24.2 = 204 gm/m3	POD: 204 mg/m3 (no increase in incidence of tumors) 0, 50 ppm (in air, water, or food)	See footnotes for full summary ¹	Test substance is a respiratory irritant and respiratory rates were not reported. Statistical analysis was not performed on gross pathological findings.	Cancer/Carcinogenesis, Reproductive/Developmental, Hepatic/Liver, Mortality, Nutritional/Metabolic: High	Cheever et al 1990 12097
Study predates OECD and GLP guidelines Mouse; Ha:ICR Swiss Mice; Female	Dermal 3 days/week 581 days The test material was applied dermally 3 days per week for 581 days	POD: An increase incidence of lung tumors was observed compared with the untreated, but not the vehicle controls 0, 42, 126mg/application/mouse	This form is for 1,2-Dichloroethane: In a chronic cancer bioassay, 42 or 126 mg of the test substance (in 0.2mL acetone)/application/mouse was applied to the clipped dorsal skin of 30 female noninbred Ha:ICR Swiss mice/group under a ventilated hood. An unspecified positive control group was also included (no further details). Negative controls included an acetone vehicle control (0.1mL), and a no-treatment group consisting of 100 mice. No methods describing occlusion or measures taken to prevent volatilization were reported. The duration of treatment was reported to be 581 days. Survival data for individual chemicals were not reported. Reported data included: days to first tumor, the number of mice with papillomas/total papilloma, and the number of mice with distant tumors (restricted to lung and stomach). No other endpoints were evaluated. A significant increase in the incidence of lung tumors was reported in the 126 mg/application/mouse group, compared with the untreated controls. Statistical analysis compared to the vehicle controls was not reported; however, available incidence data suggest that the incidence of lung tumors was comparable to the vehicle control group.	Major limitations include the failure to take measures to account for test substance volatility during application. Other limitations include: use of an untreated vs. vehicle only control for statistical analysis; lack of consistency with controls (e.g., animals in the treatment group were given 0.2mL of acetone/application vs. 0.1mL for the vehicle controls); lack of reporting chemical-specific survival data; and the limited scope of endpoints (including tumor types) evaluated. The study followed non-standard methods for a cancer bioassay. Use of a single-sex and only 30 animals/group also detracted from the study quality.	Cancer/Carcinogenesis: Uninformative	Van Duuren et al. 1979 94473

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 6 hours/day 5 days/week 17 weeks Animals (4 species) were exposed for 17 weeks.	POD: 405 mg/m3 (NOAEL) (100 ppm) 0, 100 ppm (in air, water, or food)	Sprague-Dawley rats (5/sex/group) were exposed to 1,2-dichloromethane at 0 or 100 ppm for 6 hours/day, 5 days/week, for 17 weeks. The analytical concentration was 99.7 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No clinical signs or pathological changes in exposed rats were reported. The concentration of 100 ppm was a NOAEL. This value was converted to 405 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 404.74 mg/m3, which was rounded to 405 mg/m3).	The study was an English translation of a German study. The concentration used was because a higher concentration of 1,2-DCA that was tested was toxic (caused high mortality); however, this concentration was not high enough to cause effects on any of the outcomes of interest. The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Im- mune/Hematological: Medium, Hep- atic/Liver: Medium, Mortality: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626
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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rabbit; Bunte; Both	Inhalation: Vapor 6 hours/day 5 days/week 17 weeks Animals (4 species) were exposed for 17 weeks.	POD: 405 mg/m3 (NOAEL) (100 ppm) 0, 100 ppm (in air, water, or food)	Bunte rabbits (2/sex/group) were exposed to 1,2-dichloromethane at 0 or 100 ppm for 6 hours/day, 5 days/week, for 17 weeks. The analytical concentration was 99.7 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No clinical signs or pathological changes in exposed rats were reported. One of 4 rabbits showed increased BUN and kidney histology (not further specified); the observation of these effects in 1 rabbit was not considered adverse (or of questionable adversity). The concentration of 100 ppm was a NOAEL. This value was converted to 405 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 404.74 mg/m3, which was rounded to 405 mg/m3).	The study was an English translation of a German study. The concentration used was because a higher concentration of 1,2-DCA that was tested was toxic (caused high mortality). The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Im-mune/Hematological: Medium, Hep-atic/Liver: Medium, Mortality: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Rabbit; Pirbright-White; Both	Inhalation: Vapor 6 hours/day 5 days/week 17 weeks Animals (4 species) were exposed for 17 weeks.	POD: 405 mg/m3 (NOAEL) (100 ppm) 0, 100 ppm (in air, water, or food)	Pirbright-White guinea pigs (5/sex/group) were exposed to 1,2-dichloromethane at 0 or 100 ppm for 6 hours/day, 5 days/week, for 17 weeks. The analytical concentration was 99.7 ppm. The endpoints evaluated included mortality, body weights, liver effects (liver weight and histology), and renal effects (kidney weight and histology). No clinical signs or pathological changes in exposed guinea pigs were reported. The concentration of 100 ppm was a NOAEL. This value was converted to 405 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 404.74 mg/m3, which was rounded to 405 mg/m3).	The study was an English translation of a German study. The concentration used was because a higher concentration of 1,2-DCA that was tested was toxic (caused high mortality); however, this concentration was not high enough to cause effects on any of the outcomes of interest. The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Im- mune/Hematological: Medium, Hep- atic/Liver: Medium, Mortality: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626
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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Not applicable Cat; Not specified; Both	Inhalation: Vapor 6 hours/day 5 days/week 17 weeks Animals (4 species) were exposed for 17 weeks.	POD: 405 mg/m3 (NOAEL) (100 ppm) 0, 100 ppm (in air, water, or food)	Cats (2/sex/group) were exposed to 1,2-dichloromethane at 0 or 100 ppm for 6 hours/day, 5 days/week, for 17 weeks. The analytical concentration was 99.7 ppm. The endpoints evaluated included mortality, body weights, hematological effects (blood counts, not further specified), liver effects (serum AST and ALT, bromsulphthalein test, liver weight, and liver histology), and renal effects (BUN and serum creatinine, urinary status - not further specified, kidney weight, and kidney histology). No clinical signs or pathological changes in exposed rats were reported. The concentration of 100 ppm was a NOAEL. This value was converted to 405 mg/m3 based on a molecular weight for 1,2-DCA of 98.96 g/mol (actual value = 404.74 mg/m3, which was rounded to 405 mg/m3).	The study was an English translation of a German study. The concentration used was because a higher concentration of 1,2-DCA that was tested was toxic (caused high mortality); however, this concentration was not high enough to cause effects on any of the outcomes of interest. The reporting of results was very limited (several endpoints not explicitly specified). Other missing study details included (but were not limited to): a) it was not clear that animals were obtained from a commercial source; b) animal allocation was not reported; c) animal husbandry conditions were largely not reported; d) fewer numbers of animals were used than are typically used in rodent studies of this duration; e) the timing and/or details of the outcome assessment was not reported for some endpoints (e.g., mortality, hematology); f) data reporting/analysis was not comprehensive (negative results reported briefly in text, no statistical analyses).	Im-mune/Hematological: Medium, Hep-atic/Liver: Medium, Mortality: Medium, Renal/Kidney: Medium	Hofmann et al. 1971 1937626
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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline or adherence to GLP conditions was specified. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week 78 weeks Animals were exposed 7 hrs/day, 5 days/week for 18 months. The highest exposure group started out at 250 ppm and then was lowered to 150 ppm. Note: Based on information from HERO ID 5447364, the exposure concentration might have been switched after 12 weeks of exposure, but this is not certain.	POD: ~607 mg/m3 (NOAEC, no observed adverse effects) 0, 5, 10, 10, 250 ppm (in air, water, or food)	Groups of Sprague Dawley rats (8-10/group) were exposed to EDC for 7 hrs/day, 5 days/week, at concentrations of 0, 5, 10, 50, and 250-150 ppm for 24 months (HERO ID 5447356). The current reference reports the clinical chemistry, hematology, and urinalysis results from blood collected at 18 months. The dose of 250 ppm was lowered to 150 ppm after a few weeks of treatment due to severe acute toxicity. In males, there was a significant decrease in segmented neutrophils in the high-exposure group. No other hematological changes were observed, and the study authors questioned the relevance of the finding. Serum chemistry changes either did not reach statistical significance, showed no clear relation to exposure concentration, and/or were not biologically significant (e.g., tendency towards decreased serum LDH and ALP, rather than increases). No urinary changes were observed. Overall, the study authors reported that the EDC exposures were well tolerated. NOAEC and LOAEC values were not reported. – Under the consideration that only a limited number of endpoints were evaluated. The NOAEC for these endpoints was 250-150 ppm. A reliable TWA concentration cannot be determined based on the information available; however, for the majority of the time, animals were exposed to 150 ppm (607 mg/m3). ppm was converted into mg/m3 for this review using the following formula: mg/m3 = (ppm x MW)/ 24.45	A limited number of endpoints were evaluated. Exposure conditions and exposure concentrations were insufficiently reported resulting in substantial uncertainty about the quality of the study.	Im-mune/Hematological, Hepatic/Liver, Renal/Kidney: Medium	IRFMN 1987 5447260

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guidelines or adherence to GLP conditions were specified in the study report. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week 24 weeks Animals in the highest exposure group were exposed to 250 ppm for "a few weeks" and then the exposure concentration was reduced to 150 ppm due to acute toxicity. Another study report HERO 5447364 suggested that the change occurred after 12 weeks of exposure. If this is accurate, then the TWA exposure concentration for the high exposure group was 200 ppm.	POD: 809 mg/m3 (NOAEL, based on clinical chemistry, hematology, and urinalysis only) 0, 5, 10, 50, 150, 250 ppm (in air, water, or food)	Groups of Sprague Dawley rats were exposed to EDC for 7 hrs/day, 5 days/week, at concentrations of 0, 5, 10, 50, and 250-150 ppm for 24 months (HERO ID 5447356). The current reference reports the clinical chemistry, hematology, and urinalysis results from blood collected at 6 months. The dose of 250 ppm was lowered to 150 ppm after "a few weeks of treatment" due to severe acute toxicity. All observed hematological, serum chemistry, and urinalysis changes observed either did not reach statistical significance, showed no clear relation to exposure concentration, and/or were not biologically significant (e.g., tendency towards decreased ALP, rather than increases). Overall, the study authors reported that the EDC exposures appeared to be well tolerated. NOAEC and LOAEC values were not reported. – Under the consideration that only a limited number of endpoints were evaluated. The NOAEC for these endpoints was 250-150 ppm. A reliable TWA concentration cannot be determined based on the information available in this report. HERO ID 5447364 suggested that the concentration change occurred after 12 weeks of exposure. Assuming a concentration change from 250 ppm to 150 ppm at 12 weeks, the TWA exposure would be 200 ppm. The concentration in ppm was converted to mg/m3 for this review using the following formula: $\text{mg/m}^3 = (\text{ppm} \times \text{mw})/24.45200$ $\text{ppm} = 809 \text{ mg/m}^3$ using a MW of 98.96g/mol.	A limited number of endpoints were evaluated. Exposure conditions and exposure concentrations were insufficiently reported resulting in substantial uncertainty about the quality of the study.	Im-mune/Hematological, Hepatic/Liver, Renal/Kidney: Medium	IRFMN 1976 5447359

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study did not follow any guidelines or compliance conditions. This form is for 1,2-DCE Mouse; B6C3F1 - [mouse]; Male	Oral: Drinking water 52 weeks Animals had access to water ad libitum	POD: Uninformative - not suitable for POD determination 0, 0.835, 2.5 mg chemical/mL water	In a chronic duration study evaluating tumorigenicity and tumor-promotion potential, groups of 30-day old B6C3F1 hybrid male mice (35/group) were administered test substance concentrations of 0.835 and 2.5mg/mL of drinking water, continuously for 52 weeks. To assess tumor promotion, treatment of the test substance began following a 4-week treatment with the tumor initiator DENA (10mg/L). Interim sacrifices of 10 animals/group occurred at 24 weeks. Negative controls included water only and initiator only groups. Phenobarbital, known to induce liver tumors was included as a positive control, both with and without initiation. The study included limited endpoints: mortality, body weights, water intake, and reporting of tumors in the liver and lungs. The tumorigenicity results (both with and without initiation) were negative. These results were considered surprising as previous studies with the compound via gavage were positive; the study Author calculated approximate weekly doses/mg/g bw for both studies indicates the drinking water study dose was ~3.3-fold higher. Reporting details for other endpoints were limited, mean body weights for all treated mice were reported to parallel those of control mice, but "were lower". No significant body weight changes were noted (only positive results for other compounds tested was indicated). Animals in the high-dose groups (both with and without initiation) were reported to display a significant decrease in drinking water intake at all times sampled from 8 - 48 weeks of treatment. This is a potential confounding factor to consider when evaluating other results and highlights the importance of using study-specific body weight and water intake data if dose conversions in mg/kg/day are done.	The study duration was not acceptable for a standard cancer bioassay; therefore no determinations can be made based on the negative results observed in the non-initiated groups. The duration was considered acceptable for a tumor-promotion study, however, the sensitivity of the study was reduced because the tumor initiator induced tumors in nearly 100% of the animals at 52 weeks; therefore, the ability of the test substance to cause increased incidences at this time point could not be evaluated. Instead, data were limited to only looking at the number of tumors/mouse between groups. The reporting of positive control results were questionable. Although the study reported increased incidences of liver tumors, a Fisher's Exact test (either one or two-tailed) using incidence data provided do not show significance. Limitations in data reporting, specifically the reporting of growth and water intake data from controls on separate graphs from the experimental groups makes independent evaluations and determinations of significance difficult.	Cancer/Carcinogenesis: Uninformative	Klaunig et al. 1986 200427
No compliance methods were reported. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week 78 weeks 250 ppm was reduced to 150 ppm after a few weeks because of severe acute toxicity.	POD: Negative - 1020/606 mg/m3 (250/150ppm) 0, 5, 10, 50, 250 ppm (in air, water, or food)	See footnotes for full summary ²	There are no details on inhalation exposure methodology (i.e., chamber airflow/volume, vaporization method, air changes, flow rate, method to monitor concentrations).	Mortality: Medium, Cancer/Carcinogenesis: Uninformative	IRFMN 1987 94773

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No compliance method guidelines were reported. Mouse; Swiss - [mouse]; Both	Inhalation: Vapor 7 hours/day 5 days/week 78 weeks 250 ppm was reduced to 150 ppm after a few weeks because of severe acute toxicity.	POD: Negative - 1020/606 mg/m3 (250/150 ppm) 0, 5, 10, 50, 250 ppm (in air, water, or food)	Concentration conversion: (ppm x mw)/24.45= mg/m3(250 ppm x 98.96 g/mol) /24.45 = 1,020 mg/m3Swiss mice (90/sex/group) were exposed to 5, 10, 50 or 250/150 ppm of 1,2-dichloroethane 7 hours/day, 5 time/week for 78 weeks. Due to severe toxicity seen at 250 ppm, the concentration was reduced to 150ppm after a few weeks (specific time not reported). A control group of mice (115 males and 134 females) were kept in a separate room and were not placed in inhalation chambers. Animals were weighted periodically. Gross pathologically changes were recorded. Animals were observed until spontaneous death whereby they underwent a complete autopsy. Histological evaluation was performed on the brain, Zymbal glands, retrobulbar glands, interscapular brown fats, salivary glands, tongue, lungs, thymus, diaphragm, liver, pancreas, kidneys, spleen, stomach, segments of the intestine, bladder, gonads, and other organs with pathological lesions. Survival was lower some treated mice compared to control. Survival rates at 52 weeks of age (41 weeks of exposure) in males were: 79.1, 60.0, 82.2, 75.6, and 62.2%; and in females: 94.8, 93.3, 95.6, 92.2, and 83.3%, in the control, 5, 10, 50 and 250/150 ppm groups, respectively. Survival rates at 78 weeks of age (67 weeks of exposure) in males were: 36.6, 28.9, 37.8, 33.3, and 28.9%, and in females: 56.8, 75.6, 55.6, 54.4, and 48.9% in the control, 5, 10, 50 and 250/150 ppm groups, respectively. Authors conclude that since the mortality rate was independent from tumor increase, the death maybe from "general toxic effects of the test substance under these conditions.". No data on body weight were reported. No compound-related changes in the incidence of tumors or types of tumors were observed.	There are no details on inhalation exposure methodology (i.e., chamber airflow/volume, vaporization method, air changes, flow rate, method to monitor concentrations). Control animals were housed in a separate room.	Mortality: Medium, Lung/Respiratory: Medium, Cancer/Carcinogenesis: Uninformative	IRFMN 1987 94773

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
This study pre-dates all guideline and GLP compliance practices Rat; Albino; Both	Inhalation: Vapor 7 hours/day 3.5 days/week 24 weeks 75 days Animals were exposed 7hrs/day on alternate days for 6 months (75 exposures total). An additional group of animals added after exposure day 30 to replace animals that died received 45 exposures.	POD: Uninformative - not suitable for POD determination 0, 243 ppm (in air, water, or food)	A single group of albino rats (12/sex) were exposed, whole body, to test substance vapor concentrations of 0 and 200 ppm (243 analytical) for 7hrs/day on alternate days over a span of 6 months. An air-only control group was included. Due to a significant number of mortalities caused by lung infections, replacement rats of roughly the same age were added to the study (numbers not specified); these rats were exposed for up to 45 days. Endpoints evaluated included mortality, body weight gain, body length, hematology, limited serum chemistry/icterus index, relative liver and kidney weights, liver fat analysis, and gross and microscopic examinations. As stated by the study authors "endemic lung infection of the rat colony minimizes the value of the results produced by this study." In addition, for some endpoints (e.g., liver fat analysis, samples from replacement rats exposed for 45 days and those surviving 75 days were inadvertently pooled, and the data were not considered reliable. NOAEL and LOAEL values for rats were not reported. No conclusions can be made due to poor animal health that severely impacted the study results.	This study is considered to be unacceptable for several reasons; major limitations include: 1). Lung infections were identified in rats from all groups, resulting in a high mortality rate including in the control group (57%). As recognized by the study authors, the resulting data are unusable due to the potential influence of poor health on all outcomes. 2). As animals died, attempts were made to replace them, however, the specifics (number of replacement animals used) were poorly described. Additionally, data from replacement animals (which received a maximum of 45 exposures) were included in the weight curves as if they had started with the original group which further makes results impossible to interpret. However, individual animal data is available at the end of the study.	Im-mune/Hematological: Medium, Mortality: Uninformative	Mellon Institute of Industrial Research 1947 1973131

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Study predates guideline and GLP compliance practices Dog; Mongrel; Male	Inhalation: Vapor 7 hours/day 3.5 days/week 24 weeks 75 days Animals were exposed 7 hrs/day on alternate days over a period of 6 months (75 exposures total)	POD: Uninformative - not suitable for POD determination 0, 243 ppm (in air, water, or food)	A single male mongrel dog was exposed, whole body, to a test substance target vapor concentration of 200 ppm (243 ppm analytical), 7 hrs/day on alternate days over a period of 6 months (75 exposures total). An air-only control dog was included. Animal weight gain was monitored. Other endpoints included hematology, serum parameters (serum phosphatase, BUN), liver functional tests (many of which were poorly described) including the thymolbarbital turbidity test, bromosulfalein retention, and gross and microscopic examinations on a limited number of tissues. It is unclear if relative liver and kidney weights were measured for dogs, no data were provided, and these organ weights were not mentioned in the results section of the text. The dog exposed to 1,2-Dichloroethane gained 1.09 kg throughout the study compared to a 3.66 kg gain in the control dog. Some haematological parameters were altered, compared with the previous measurement throughout the study; overall the study authors reported blood counts to be essentially normal. The exposed dog had marked cloudy swelling of the convoluted tubules with attendant desquamation and case formation in the kidney. The authors noted that "the single animal exposed to each vapor makes it unwise to base any definite conclusions on their response," and the study was "not recommended for publication." NOAEL and LOAEL values were not determined.	This study had a number of limitations; these include: the use of mongrel (mixed-breed) dogs, use of a single animal/group and a single exposure group, and the lack of details (e.g, methods, animal husbandry). The study authors acknowledge that few conclusions can be made due to the small number of animals used.	Cardiovascular: Low, Immune/Hematological: Medium, Nutritional/Metabolic: Medium, Endocrine: Medium, Hepatic/Liver: Uninformative, Mortality: Uninformative, Lung/Respiratory: Uninformative	Mellon Institute of Industrial Research 1947 1973131

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
<p>"This study was conducted with reference to the Organisation for Economic and Co-operation and Development (OECD) Guideline for Testing of Chemicals 453, Combined Chronic Toxicity/Carcinogenicity Studies, and in accordance with the OECD Principles of Good Laboratory Practice (GLP). The animals were cared for in accordance with the Guide for the Care and Use of Laboratory Animals. This study was approved by the ethics committee of the Japan Bioassay Research Center (JBRC)."</p> <p>Rat; Fischer 344/DuCrj - [rat]; Both</p>	<p>Inhalation: Vapor 6 hours/day 5 days/week 104 weeks</p>	<p>POD: Positive for neoplastic lesion at 160 ppm (654 mg/m3) 0, 10, 40, 160 ppm (in air, water, or food)</p>	<p>Doses were converted using the formula: (ppm * mw)/24.2 = mg/m3; (40 ppm * 98.96 g/mol)/24.2 = 164 mg/m3. In a two year cancer study, male and female F334/DuCrj rats (50/sex/group) were exposed to 0, 10, 40 or 160 ppm (0, 41, 164 or 654 mg/m3, respectively) of 1,2-dichloroethane via whole body inhalation for 104 week (6 hours/day, 5 days/week). Endpoints evaluated included mortality, clinical signs of toxicity, body weight, food consumption, hematology, blood biochemistry, urinalysis, organ weight, gross necropsy of organs, histopathology. There was no difference in survival rate between the groups in the females (70-82%) or males (64-74%). No exposure related changes in organ weights, hematology, blood biochemistry or urinary parameters were seen in either sex. No non-neoplastic lesions were observed histologically in either sex. In females significant increases in subcutaneous fibroma (5/50), mammary gland adenoma (11/50) and fibroadenoma (13/50) and combined mammary gland adenoma, fibroadenoma and adenocarcinoma (25/50) were seen at 160 ppm (654 mg/m3) compared to control (0/50, 3/50, 4/50, 8/50, respectively). A significant dose-dependent trend was also reported for increased subcutaneous fibromas, mammary gland adenomas, fibroadenomas and adenocarcinomas in females. In males, significant increases in mammary gland fibroadenoma (5/50) and combined mammary gland adenoma and fibroadenoma (7/50) were seen at 160 ppm (654 mg/m3) compared to control (0/50 and 1/50 respectively). A significant dose-dependent trend was reported for increased subcutaneous fibroma, mammary gland fibroadenoma, combined mammary fibroadenoma and adenoma and peritoneum mesothelioma in males.</p>	<p>The test substance is a respiratory irritant therefore respiratory rate should be reported. There were deficiencies in reporting the preparation and storage of test substance.</p>	<p>Cancer/Carcinogenesis, Mortality: High</p>	<p>Nagano et al. 2006 200497</p>

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
"This study was conducted with reference to the Organisation for Economic and Co-operation and Development (OECD) Guideline for Testing of Chemicals 453, Combined Chronic Toxicity/Carcinogenicity Studies, and in accordance with the OECD Principles of Good Laboratory Practice (GLP). The animals were cared for in accordance with the Guide for the Care and Use of Laboratory Animals. This study was approved by the ethics committee of the Japan Bioassay Research Center (JBRC)."	Inhalation: Vapor 6 hours/day 5 days/week 104 weeks	POD: 368 mg/mg (LOAEL, respiratory) (90 ppm) 0, 10, 30, 90 ppm (in air, water, or food)	See footnotes for full summary ³	The test substance is a respiratory irritant therefore respiratory rate should be reported. There were deficiencies in reporting the preparation and storage of test substance. Females lung data only reported for high dose group and controls.	Cancer/Carcinogenesis, Mortality: High	Nagano et al. 2006 200497

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
NTP study, GLP compliance was not specified. Mouse; B6C3F1 - [mouse]; Both	Oral: Gavage 5 days/week 78 weeks Doses reported above are TWA dosage Σ (dosage x weeks received/ Σ (sum weeks receiving chemical)). Low-dose group animals received 75 mg/kg bw for 8 weeks, then 100 mg/kg bw for 100 weeks. High-dose animals were administered 150 mg/kg bw for 8 weeks, then 200 mg/kg bw for 70 weeks. All animals were dosed 5 days/week for the duration of the study.	POD: 149 mg/kg-day (NOAEL, based on decreased survival and body weights in female mice) 0, 149, 299 mg/kg-bw/day	See footnotes for full summary ⁴	A discussion/justification for the changes in dosing throughout the test period was not provided. Lack of additional details/incidence data for clinical signs precludes the ability to consider this endpoint for the determination of a NOAEL/LOAEL call.	Cancer/Carcinogenesis: High, Immune/Hematological: High, Mortality: High, Lung/Respiratory: High, Skin/Connective Tissue: High, Endocrine: High, Nutritional/Metabolic: Medium	NTP 1978 5441108
NTP study, GLP compliance was not specified. Mouse; B6C3F1 - [mouse]; Both	Oral: Gavage 5 days/week 78 weeks Doses reported above are TWA dosage Σ (dosage x weeks received/ Σ (sum weeks receiving chemical)). Low-dose group animals received 125 mg/kg bw for 8 weeks, then 200 mg/kg bw for 3 weeks, then 150 mg/kg for 67 weeks. High-dose animals were administered 250 mg/kg bw for 8 weeks, then 400 mg/kg bw for 3 weeks, then 300 mg/kg for 67 weeks. All animals were dosed 5 days/week for the duration of the study.	POD: 149 mg/kg-day (NOAEL, based on decreased survival and body weights in female mice) 0, 149, 299 mg/kg-bw/day	See footnotes for full summary ⁵	A discussion/justification for the changes in dosing throughout the test period was not provided. Lack of additional details/incidence data for clinical signs precludes the ability to consider this endpoint for the determination of a NOAEL/LOAEL call.	Cancer/Carcinogenesis: High, Immune/Hematological: High, Mortality: High, Nutritional/Metabolic: Medium	NTP 1978 5441108
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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines and use of GLP practices. Rabbit; Not specified; Both	Inhalation: Vapor 7 hours/day 5 days/week 248 days The exact duration of exposure is unclear. At 400 ppm rabbits "tolerated" exposure for 232 days" and at 100 ppm, rabbits "tolerated" exposure for 248 days without signs of adverse effects; the time of termination is not specified.	POD: Not determined 0, 100, 400 ppm (in air, water, or food)	Rabbits (2 males and 1 female/group) were exposed to test substance vapor concentrations of 100 or 400 ppm 7 hrs/day, 5 days a week. The study indicates that the rabbits "tolerated" 165 exposures in 232 days with "no evidence of intoxication as judged by general appearance, behavior, mortality, and body weight." No effects on growth, blood nonprotein nitrogen, urea nitrogen, serum phosphatase, plasma prothrombin clotting time, final body and organ weights were observed and there were no gross and microscopic examinations of tissues (no data were provided) at either exposure level. No further details were provided. Since the study did not indicate whether comparisons were made to controls, NOAEC and LOAEC values were not determined.	Experiments in rabbits were deemed unacceptable due to the small number of animals studied, and the lack of study details, questionable use of controls, and insufficient data reporting.	Neurological/Behavioral: High, Hepatic/Liver: Medium, Mortality: Medium, Nutritional/Metabolic: Medium	Spencer et al. 1951 62617
The study pre-dates OECD guidelines and use of GLP practices. Monkey; Not specified; Male	Inhalation: Vapor 7 hours/day 5 days/week 212 days At 400 ppm both Monkeys were killed in a moribund state after 8 and 12 exposures, respectively. The duration noted above applies only to the 100 ppm group.	POD: 409 mg/m3 (100 ppm), (re-reported NOAEC, based on the lack of adverse effects) 0, 100, 400 ppm (in air, water, or food)	Male monkeys (2/group) were exposed to test substance vapor concentrations of 100 or 400 ppm, 7 hours/day, 5 days/week. At 400 ppm, one monkey was killed after 8 days of exposure due to signs of morbidity. This animal exhibited signs of liver changes: enlarged liver with increases of neutral fat and esterified cholesterol content and marked degeneration and vacuolation of liver cells, and kidney changes: moderate degeneration of the epithelium of the renal tubules with cast formation and distention of the lumens. Increased plasma prothrombin clotting time was also reported. The second monkey was killed after 12 hours, also due to a moribund state. This animal showed similar changes but to a milder degree. Hematological parameters were reported to have no significant changes compared with values obtained from the same animals pre-exposure. Monkeys in the 100 ppm group tolerated 148, 7-hr exposures in 212 days. No evidence of adverse effects as judged by general appearance, behavior, periodic hematological examination, growth, final body and organ weights, and gross and microscopic examination of tissues was observed. Data were not provided; no further details. An NOAEC of 100 ppm (409 mg/m3) was reported based on the apparent lack of adverse effects Using a molecular weight of 98.96, exposure concentrations of 100 and 400 ppm were calculated to be equivalent to approximately 409 and 1,636 mg/m3.	The studies on Monkeys lacked details regarding the animals, and whether or not control groups were actually used. data reporting did not include potentially useful quantal information (e.g., bodyweight data). It is unclear if comparisons were made to controls, particularly since hematological changes were compared to 1 to 3 pre-exposure examinations.	Hepatic/Liver: Medium, Mortality: Medium, Nutritional/Metabolic: Medium, Renal/Kidney: Medium	Spencer et al. 1951 62617

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines and use of GLP practices. Rat; Wistar - [rat]; Both	Inhalation: Vapor 7 hours/day 5 days/week 212 days Although all exposure groups were intended for chronic duration exposures, animals at the high exposure level died within 14 days (females) and 56 days (males). No further information was provided on these animals. At 200 ppm exposure levels, it was reported that both male and female rats tolerated 212 days of exposure without signs of adverse effects. The exact day of study termination was not explicitly reported, but based on data tables, animals were likely terminated after 212 days. At 100 ppm, the study indicates that male rats tolerated 211 days of exposure, and female rats tolerated 198 days of exposure without evidence of adverse effects. It is unclear whether the animals were differentially sacrificed at these timepoints, or if exposure duration was consistent with the 200 ppm group.	POD: 818 mg/m3 (200 ppm); (re-reported NOAEL based on no observed adverse effects). 0, 100, 200, 400 ppm (in air, water, or food)	In a chronic-duration study, Albino rats (15/sex/group) were exposed to ethylene dichloride vapor concentrations of 100, 200, and 400 ppm for up to 212 days. Separate concurrent air-only and untreated control groups were used for each sex and each exposure concentration. At 400 ppm all female rats died within 14 days and all male rats died within 56 days. No further details on deaths or other endpoints were reported for this group. At 100 and 200 ppm, there was no evidence of adverse effects as judged by the general appearance, behavior, growth, mortality, final body weight, organ weights, periodic hematological examinations, limited serum chemistry, or gross or microscopic examinations as compared with controls (specific control group, e.g., air-only or unexposed, used was not specified for some endpoints. Total lipid, phospholipid, neutral fat, and free and esterified cholesterol of the liver were also reported to produce only normal results. The study author reported a NOAEL of 200 ppm for lack of adverse effects at this exposure level.	A growth curve and data table reporting body weights and relative organ weights (as means only in the absence of variance) were provided for the 200 ppm group only. Negative findings at 100 ppm were described in the text. Although the study indicated that statistical analysis was done on data to compare means, statistical results were not reported with the 200 ppm data. Independent evaluation of the data indicates that the magnitudes of change for body and organ weights, compared with air-only controls are small (<10%). Due to lack of data reporting, the 100 ppm data could not be independently reviewed.	Neurological/Behavioral: High, Reproductive/Developmental: Medium, Immune/Hematological: Medium, Hepatic/Liver: Medium, Mortality: Medium, Nutritional/Metabolic: Medium, Renal/Kidney: Medium, Lung/Respiratory: Medium	Spencer et al. 1951 62617

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The study pre-dates OECD guidelines and use of GLP practices. Guinea pig; Not specified; Both	Inhalation: Vapor 7 hours/day 5 days/week 248 days At 200 ppm, guinea pigs tolerated exposure for 7 hrs/day, 5 days a week, for 246 days. The day of termination was not explicitly stated; however, based on the available data tables, animals were terminated on study day 248. Animals in the 100 ppm group were reported to tolerate exposure for 170 days (males) and 226 days (females), without signs of adverse effects. It is unclear whether exposures were stopped on these study days. The data table only indicates that the data was collected from animals to "as many as 162 seven-hr exposures in 226 days.	POD: 409 mg/m³ (100 ppm); (re-reported NOAEC, for lack of adverse effects) 0, 100, 200, 400 ppm (in air, water, or food)	See footnotes for full summary ⁶	Data for an air-only control for males only at 100 ppm is not included in the data table. An explanation is not provided in the text, and statistical analysis of final body weight and organ weights for this exposure group were subsequently done using the unexposed groups as the controls (including in females despite the availability of an air-only control). Ambiguity as to the exact duration of exposure in the 100 ppm group, and lack of data reporting for several endpoints reduces the quality of this study.	Hepatic/Liver: Medium, Nutritional/Metabolic: Medium, Renal/Kidney: Medium	Spencer et al. 1951 62617
None reported Mouse; ppG64; Female	Oral: Gavage 7 days/week 40 weeks	POD: Positive for carcinogenicity (lymphoma) 0, 150, 300 mg/kg-bw/day	See footnotes for full summary ⁷	Only two dose levels were tested and one dose (high dose) had to be reduced during weeks 1-3 due to decreased body weight gain. The duration of the study (40 weeks of dosing) was shorter than standard cancer bioassays. The dosing solutions were prepared weekly and it is unclear whether measures were taken to limit volatilization of test material during preparation and storage. Results for gross necropsy of early sacrificed and mice that died prior to the termination of the study were not provided, and gross necropsy was not performed on mice that survived to the end of the study. Almost no results were provided for clinical chemistry parameters. The number of animals used was lower than typically used in OECD guideline carcinogenicity studies.	Cancer/Carcinogenesis: Medium	Storer et al. 1995 200612

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
None reported Mouse; ppG64; Male	Oral: Gavage 7 days/week 40 weeks	POD: Negative for carcinogenicity 0, 100, 200 mg/kg-bw/day	See footnotes for full summary ⁸	Only two dose levels were tested and one dose (high dose) had to be reduced during weeks 1-3 due to decreased body weight gain. The duration of the study (40 weeks of dosing) was shorter than standard cancer bioassays. The dosing solutions were prepared weekly and it is unclear whether measures were taken to limit volatilization of test material during preparation and storage. Results for gross necropsy of early sacrificed and mice that died prior to the termination of the study were not provided, and gross necropsy was not performed on mice that survived to the end of the study. Almost no results were provided for clinical chemistry parameters. The number of animals used was lower than typically used in OECD guideline carcinogenicity studies.	Cancer/Carcinogenesis: Medium	Storer et al. 1995 200612

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Isomer: 1,2-Dichloroethane - Chronic (>91 days)						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The animals were maintained in accordance with "Standards Relating to the Care and Management of Experimental Animals" (Notification No. 6, March 27, 1980 of the Prime Minister's Office, Japan), Guidelines for Proper Conduct of Animal Experiments (June 1, 2006, Science Council of Japan), and the in-house guidelines for the Care and Use of Laboratory Animals. Mouse; CB6F1-Tg rasH2@Jcl (rasH2); Both	Dermal 3 days/week 26 weeks Dose conversion to mg/kg/day: 126 mg/0.02 kg = 6300 mg/kg-bw/day (based on default body wt for mouse = 0.02 kg)	POD: Positive for carcinogenicity (respiratory tract) 0, 126mg	See footnotes for full summary ⁹	The study tested only one dose of 1,2-DCE and effects were observed at the only dose tested (i.e., no NOAEL was identified). Additionally, group sizes were only 10/sex/dose and, due to severe clinical signs, five of the females had to be euthanized before scheduled termination.	Cancer/Carcinogenesis, Mortality, Nutritional/Metabolic, Renal/Kidney, Lung/Respiratory, PESS (significant weight loss/decreased body weight in treated female mice (week 18 to end of experiment compared to controls): High	Suguro et al. 2017 4451542

* Overall Quality Determination

¹ 12097: Sprague-Dawley rats (50/sex/group) were exposed to 50 ppm 1,2-dichloroethane (204 mg/m³) or filtered air for 7 hours/day, 5 days a week for 2 years. Animals were examined twice a day for signs of toxicity and palpated for masses weekly after the first 4 months. Rats were weighed weekly for the first 8 weeks and then monthly thereafter. Food and water consumptions was measured throughout the study. Endpoints evaluated included mortality, terminal body weight, gross necropsy on a complete set of tissues, organ weights (not specified) and histology 31 tissues, gross lesions and tissue masses. Moribund or dead animals underwent histological evaluation of at least 10 tissues and tissue masses. Survival rate in exposed rats (60 and 64%) was similar to control (58 and 54%) in males and females, respectively. No clinical signs of toxicity were noted during the study. Terminal body weights were not significantly different from control. No significant difference in food or water consumption was seen between exposed and control rats. Absolute and relative liver weights were not different from controls (other organ weights not reported). Gross testicular lesions were found in higher frequency in exposed males (24%) compared to control (10%) (data not shown and gross pathologic observations were not evaluated statistically). Female exposed rats showed a slight increase in the incidence of basophilic focal cellular changes in the pancreas, which were not apparent in the male rat (data not shown). No significant increases in any tumor type were seen in exposed males or females compared to control. In an experiment with potential relevance for PESS, rats simultaneously exposed to 1,2-dichloroethane and disulfiram (Antabuse) had an increased lesions in liver, mammary and testicular tissues, increased incidence of intrahepatic bile duct cholangiomas. Male rats in this group had an increased incidence of subcutaneous fibromas, neoplastic nodules and interstitial cell tumors in the testes and female rats in this group had a higher incidence of mammary adenocarcinomas.

- ² 94773: Concentration conversion: $(\text{ppm} \times \text{mw})/24.45 = \text{mg}/\text{m}^3$ ($250 \text{ ppm} \times 98.96 \text{ g}/\text{mol}$) $/24.45 = 1,020 \text{ mg}/\text{m}^3$ Sprague-Dawley rats (90/sex/group) were exposed to 0, 5, 10, 50 or 250/150 ppm of 1,2-dichloroethane 7 hours/day, 5 time/week for 78 weeks. Due to severe toxicity seen at 250 ppm, the concentration was reduced to 150 ppm after a few weeks (specific time not reported). Two negative control groups (90/sex/group) were included, one group were placed in chambers the other was kept in a nearby room and not placed in the inhalation chamber (untreated). Throughout the study, animals were weighted periodically. Gross pathological changes were recorded. Animals were observed until spontaneous death whereby they underwent a complete autopsy. Histological evaluation was performed on the brain, Zymbal glands, retrobulbar glands, interscapular brown fats, salivary glands, tongue, lungs, thymus, diaphragm, liver, pancreas, kidneys, spleen, stomach, segments of the intestine, gonads, bladder and other organs with pathological lesions. There was no dose-related relationship in the survival rate of rats. Survival rates at 52 weeks of age (40 weeks of exposure) in males were: 92.2, 88.9, 98.9, 90.0, 96.7, and 87.8%; and in females: 97.8, 87.8, 100, 96.7, 96.7, and 93.2%, in the untreated control, controls placed in chambers, 5, 10, 50 and 250/150 ppm groups, respectively. Survival rates at 104 weeks of age (78 weeks of exposure, plus 14 weeks post-exposure) in males were: 17.8, 13.3, 50.0, 14.4, 18.9, and 11.1%, and in females: 40.0, 24.4, 53.3, 28.9, 32.2, and 23.3% in the untreated control, controls placed in chambers, 5, 10, 50 and 250/150 ppm groups, respectively. No data on body weight were reported. No compound-related changes in the incidence of tumors were observed. A moderate increase in the percentage of rats with benign mammary tumors (fibromas and fibroadenomas) were seen in treated rats (94.4, 83.7, 90.3 and 91.5% at 5, 10, 50 and 250/150 ppm respectively) compared to the chamber control group (79.1%) but not compared to the untreated group (94.4%). There was not a significant dose-response trend. Study authors state they have seen a non-dose related increase in mammary fibromas and fibroadenomas in their lab previously and do not believe this is compound-related. The study authors also state that onset of fibroma and fibroadenomas is age-correlated and that the difference in tumor incidence is "probably due mainly to the different survival rates within the groups". This study discusses data obtained from a parallel study in which fourteen-month-old Sprague-Dawley rats (8/sex/group) were exposed to 0, 5, 10, 50 or 150 ppm of 1,2-dichloroethane up to 12 months and used to evaluate clinical chemistry and urine parameters. Additionally, no difference in incidence of bronchial hyperplasia (4.4, 5.6, 3.9 and 1.1 at 5, 10, 50 and 250/150 ppm) was seen compared to control in chambers (3.9) and untreated control (8.3). Data are briefly discussed here, but are presented in IRFMN Report, April 1978 and IRFMN Report, March 1978.
- ³ 200497: Dose conversion was calculated using the formula: $(\text{ppm} \times \text{mw})/24.2 = \text{mg}/\text{m}^3$; $(10 \text{ ppm} \times 98.96 \text{ g}/\text{mol})/24.2 = 41 \text{ mg}/\text{m}^3$ In a two year cancer study, male and female Crj:BDF1 mice (50/sex/group) were exposed to 0, 10, 30 or 90 ppm (0, 41, 123 or 368 mg/m³, respectively) of 1,2-dichloroethane via whole body inhalation for 104 week (6 hours/day, 5 days/week). Endpoints evaluated included mortality, clinical signs of toxicity, body weight, food consumption, hematology, blood biochemistry, urinalysis, organ weight, gross necropsy of organs, histopathology. In males, survival was similar between the groups (65-78%). In females, no significant differences in survival were seen at the 10 ppm (56%), or 90 ppm (52%) groups compared to control (69%), however at 30 ppm, survival was significantly decreased (38%) compared to control (this was not considered exposure related). Growth rate and food consumption were not different from control in either sex. No exposure related changes in hematological parameters, blood biochemical or urinary parameters were seen in either sex. In males, organ weights were not significantly different. In females, relative lung weight was significantly increased 25% at 90 ppm compared to control (data on other doses were not reported). In females, incidences of lymph node malignant lymphomas were significantly increased at 10 ppm (17/50) and 30 ppm (22/50) compared to control (6/49), but not at 90 ppm (12/50). Increased incidences of subcutaneous masses were seen in the 90 ppm group (9/50) compared to control (2/50) in females. A significant dose-dependent trend was reported for increased lung bronchiolo-alveolar adenomas and carcinomas, uterus endometrial stromal polyps, mammary gland adenocarcinomas and liver hepatocellular adenomas in females. In males, incidences of liver hemangiosarcoma were significant increased at 30 ppm (6/50) and 90 ppm (5/50) compared to control (0/50). No non-neoplastic lesions were observed histologically in males.
- ⁴ 5441108: In a 78-week cancer bioassay, groups of B3CF1 Mice (50/sex/ treatment group; 20/sex/control group) were administered test substance time-weighted average doses of 0, 97, and 195 mg/kg/day (males) and 0, 149, and 299 mg/kg-day (females) via gavage for a total of 78 weeks. Animals were allowed to recover for up to 13 weeks post-dosing. Control groups consisted of age-matched vehicle (corn oil) controls and a non-age-matched untreated control group that were not concurrently assessed. Animals were monitored for survival and behavioral/clinical signs; growth was monitored, and all animals were necropsied. Tissues/organs from all groups were examined histologically for non-neoplastic and neoplastic lesions. There was no statistically significant association between dosage and mortality in males. Survival of low dose males and untreated controls were lower than the survival of high-dose males and vehicle controls. Female mice showed a statistically significant positive association between dosage and mortality; deaths at the high dose may have been tumor-related. Appearance and behavior in treated mice were reported to be "generally comparable" with that in control mice (data not provided). Sores and alopecia were reported in all groups, particularly in males, and clinical signs of ageing were apparent towards the end of the study. Palpable nodules and/or tissue masses and swelling around the abdominal midline were reported to be observed with "slightly greater frequency" in treated groups than in controls (sex and dose groups not specified). Mean body weights of high-dose females were depressed (data were not statistically evaluated) starting as early as week 15 (note, growth curves were reported to be complicated by mortality, and weights of untreated controls were not comparable to vehicle controls). Despite the lack of statistical analysis, the body weights of high dose females were depressed by >10% compared to either control group throughout most of the study. The only significant non-neoplastic histopathological change was a dose-related increase in incidences of chronic pneumonia in both sexes, significant only in high-dose males (as determined by SRC). NOAEL/LOAEL values for non-cancerous endpoints were not reported by the study authors. A LOAEL of 299 mg/kg-day was determined for this review, based on decreased body weights and increased mortality in female rats. The NOAEL was 149 mg/kg-day. Positive relations with tumor incidences included: hepatocellular carcinomas (males, significant at the high dose); alveolar/bronchiolar adenomas (both sexes, significant at high-dose for males and low and high doses females); mammary gland adenocarcinomas (females, significant in both dose groups via Fisher exact, but only at the high-dose with Bonferroni criterion); endometrial tumors (females, significant in both dose groups using pooled vehicle controls). Finally, time-adjusted analysis indicated the incidence of squamous-cell carcinomas in the forestomach in females was also significant. The test substance was considered to be carcinogenic.
- ⁵ 5441108: In a 78-week cancer bioassay, groups of B3CF1 Mice (50/sex/ treatment group; 20/sex/control group) were administered test substance time-weighted average doses of 0, 97, and 195 mg/kg/day (males) and 0, 149, and 299 mg/kg-day (females) via gavage for a total of 78 weeks. Animals were allowed to recover for up to 13 weeks post-dosing. Control groups consisted of age-matched vehicle (corn oil) controls and a non-age-matched untreated control group that were not concurrently assessed. Animals were monitored for survival and behavioral/clinical signs; growth was monitored, and all animals were necropsied. Tissues/organs from all groups were examined histologically for non-neoplastic and neoplastic lesions. There was no statistically significant association between dosage and mortality in males. Survival of low dose males and untreated controls were lower than the survival of high-dose males and vehicle controls. Female mice showed a statistically significant positive association between dosage and mortality; deaths at the high dose may have been tumor-related. Appearance and behavior in treated mice were reported to be "generally comparable" with that in control mice (data not provided). Sores and alopecia were reported in all groups, particularly in males, and clinical signs of ageing were apparent towards the end of the study. Palpable nodules and/or tissue masses and swelling around the abdominal midline were reported to be observed with "slightly greater frequency" in treated groups than in controls (sex and dose groups not specified). Mean body weights of high-dose females were depressed (data were not statistically evaluated) starting as early as week 15 (note, growth curves were reported to be complicated by mortality, and weights of untreated controls were not comparable to vehicle controls). Despite the lack of statistical analysis, the body weights of high dose females were depressed by >10% compared to either control group throughout most of the study. The only significant non-neoplastic histopathological change was a dose-related increase in incidences of chronic pneumonia in both sexes, significant only in high-dose males (as determined by SRC). NOAEL/LOAEL values for non-cancerous endpoints were not reported by the study authors. A LOAEL of 299 mg/kg-day was determined for this review, based on decreased body weights and increased mortality in female rats. The NOAEL was 149 mg/kg-day. Positive relations with tumor incidences included: hepatocellular carcinomas (males, significant at the high dose); alveolar/bronchiolar adenomas (both sexes, significant at high-dose for males and low and high doses females); mammary gland adenocarcinomas (females, significant in both dose groups via Fisher exact, but only at the high-dose with Bonferroni criterion); endometrial tumors (females,

significant in both dose groups using pooled vehicle controls). Finally, time-adjusted analysis indicated the incidence of squamous-cell carcinomas in the forestomach in females was also significant. The test substance was considered to be carcinogenic.

- ⁶ 62617: Albino guinea pigs (8/sex) were exposed, whole body, to ethylene dichloride vapor concentrations of 100, 200, and 400 ppm for 246 days (at 200 ppm) and up to 212 days (at 100 ppm). Exposure to 400 ppm resulted in severe intoxication and death. 100% of the males died within 14 days, and 100% of females died within 32 days (control mortality not reported). At 200 ppm, statistically significant reductions in final body weights were observed in males (16%) and females (9%), compared with air-only controls. Relative liver weights were also significantly increased in male rats (10.6%). Relative male kidney weights were slightly elevated (6%), but did not reach statistical significance. The study reports that liver-lipid analyses indicated, on average, a slight increase over the controls (specific control group not specified) in total lipid, phospholipid, neutral fat, and free and esterified cholesterol. No quantal data for these endpoints were provided. It was also reported that microscopic examinations showed that about half of the guinea pigs examined (both sexes), exhibited slight parenchymatous degeneration of the liver with a few fat vacuoles diffusely distributed. Incidence values and a statement whether any control animals exhibited these changes were not included. At 100 ppm, it was reported that there were no observed adverse effects in any endpoints; however, the data tables show female final body weights were statistically significantly decreased compared to the unexposed controls. Compared to air-only controls, exposed female final body weights were non-significantly decreased by (13%). Male final body weights were significantly decreased relative to unexposed controls but the magnitude of change was small (3%). Liver weights were significantly increased in both sexes compared to untreated controls, and female liver weights were increased by 11% compared with the air-only controls. The reported NOAEC was 100 ppm based on lack of adverse effects at this dose. Given the significant changes in final body weight and relative liver weights at this exposure level, 100 ppm (409 mg/m³) could be considered an LOAEC. 100 ppm was converted to 409 mg/m³ using a molecular weight of 98.96 g/mol.
- ⁷ 200612: Nine - 14 week old mice (PIM transgenic mice, strain ppG64) were administered 0 (vehicle control, 5 mg/kg corn oil), 150, or 300 mg/kg/day of 1,2-dichloroethane in corn oil daily via gavage for 40 weeks (n=27 at the start of the experiment for each group). There was a substantial amount of mortality due to treatment in the high dose groups. Initial doses for the females were 300 mg/kg/day, but were reduced twice during week 1 (final dose was 200 mg/kg/day) due to treatment related mortality and decreased body weight. There was also a suspension of dosing in the high dose female group after 3.5 weeks for 2 weeks because mice were not gaining weight. After the suspension, dosing was at a level of 150 mg/kg/day for the remainder of the study. Endpoints included mortality, clinical signs, body weight, hematology (leukocyte and erythrocyte counts, hemoglobin, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, and platelets), clinical chemistry (alanine aminotransferase, urea nitrogen, alkaline phosphatase, creatinine, aspartate aminotransferase, and calcium), gross necropsy, and histopathology of the following tissues from mice found dead or killed prior to terminal necropsy: salivary gland, stomach, small intestine, large intestine, liver, gall bladder, pancreas, adrenal, thyroid, parathyroid, pituitary, kidney, urinary bladder, ovary/testis, including epididymis, uterus/prostate, skin, mammary gland, lung, heart, spleen, lymph node, thymus, skeletal muscle, bone, bone marrow, brain, cervical spinal cord, sciatic nerve, and eye. There were no results reported for most gross necropsy or clinical chemistry endpoints. Decreased survival and body weight gain occurred in females of both dose groups. Slight anemia was reported at terminal necropsy in females in the low-dose group. Tumor incidence of malignant lymphoma was increased in the high-dose group only. However, authors noted that determining significant differences may in tumor incidence may be impeded due to the high level of background in the control group. Finally, benzene was characterized as a "known lymphomagen" and used as a positive control (two dose levels, 50 mg/kg and 100 mg/kg). It failed to produce a higher incidence of lymphoma in the mouse model. The authors concluded that the duration of exposure was insufficient to observe benzene carcinogenic effects.
- ⁸ 200612: Nine - 14 week old mice (PIM transgenic mice, strain ppG64) were administered 0 (vehicle control, 5 mg/kg corn oil), 100, or 200 mg/kg/day 1,2-dichloroethane in corn oil daily via gavage for 40 weeks (n=27 at the start of the experiment for each group). The high dose was reduced to 175 mg/kg/day and then to 125 mg/kg due to treatment related mortality and decreased body weight in the first 1-3 weeks of the study. There was also a suspension in dosing after 3.5 weeks for 2 weeks because mice were not gaining weight. After suspension, the final high dose for males was reported to be 100 mg/kg. Endpoints included mortality, clinical signs, body weight, hematology (leukocyte and erythrocyte counts, hemoglobin, hematocrit, mean corpuscular volume, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, and platelets), clinical chemistry (alanine aminotransferase, urea nitrogen, alkaline phosphatase, creatinine, aspartate aminotransferase, and calcium), gross necropsy, and histopathology of the following tissues from mice found dead or killed prior to terminal necropsy: salivary gland, stomach, small intestine, large intestine, liver, gall bladder, pancreas, adrenal, thyroid, parathyroid, pituitary, kidney, urinary bladder, ovary/testis, including epididymis, uterus/prostate, skin, mammary gland, lung, heart, spleen, lymph node, thymus, skeletal muscle, bone, bone marrow, brain, cervical spinal cord, sciatic nerve, and eye. For animals that survived until terminal necropsy, histological examination was limited to the thymus and possible tumors and other gross ophthalmic changes. There were no results reported for most gross necropsy or clinical chemistry endpoints. After 40 weeks of exposure, decreased body weight gain occurred in high-dose males compared with controls. Slight anemia with a regenerative response (increased mean corpuscular volume) was reported at terminal necropsy of low-dose group males. No effects on survival or tumor incidence were observed. Benzene was characterized as a "known lymphomagen" and used as a positive control (two dose levels, 50 mg/kg and 100 mg/kg). It failed to produce a higher incidence of lymphoma in the mouse model. The authors concluded that the duration of exposure was insufficient to observe benzene carcinogenic effects.
- ⁹ 4451542: Mice (10/sex/dose, strain CB6F1-Tg rash2@Jcl) were dermally exposed to 1,2-dichloroethane (1,2-DCE) on the shaved dorsal skin at doses of 0 (vehicle control) or 126 mg (equivalent to 6300 mg/kg-bw/day) in acetone, 3 days/week, for 26 weeks. Endpoints included clinical signs, body weights (measured weekly for the first 14 weeks and every other week thereafter), food consumption and water intake (over a 2-day period before each weighing), gross necropsy, organ weights (brain, heart, lung, thymus, spleen, kidney, liver, testis, and ovary), and histopathology (brain, heart, lung, thymus, spleen, kidney, liver, testis, and ovary, aorta, lymph nodes [mandibular, mesenteric], thymus, pituitary, thyroid, parathyroid, adrenal, nasal cavity, trachea, lung, tongue, salivary gland, esophagus, stomach, small intestine, large intestine, gallbladder, pancreas, urinary bladder, prostate, seminal vesicle, epididymis, uterus, mammary gland, vagina, spinal cord, sciatic nerve, eye, Harderian gland, skin, skeletal muscle, bone and bone marrow, and all tissues of abnormal appearance). Five female mice treated with 1,2-DCE were euthanized in a moribund condition, showing irregular respiration and/or emaciation during weeks 17 to 25; these animals had bronchiolo-alveolar adenocarcinomas. Test substance-exposed females had significantly decreased body weight changes from week 18 to the end of the experiment compared to controls. No clinical signs or body weight effects were observed in males. At gross necropsy, discolored spots/areas or nodules were found in the lungs of test substance-exposed animals; large-sized, discolored nodules were more prominent in females than males. The absolute and relative lung weights in test substance-exposed females were significantly increased compared to those of controls. The incidence and multiplicity of both bronchiolo-alveolar adenomas and adenocarcinomas were significantly increased in test substance-exposed animals of both sexes, and bronchiolo-alveolar hyperplasias were significantly increased in females. In test substance-exposed males, the observed lung tumors were mainly solid adenomas; in contrast, large bronchiolo-alveolar adenocarcinomas were predominant in test substance-exposed females. There were no metastases in any organs or tissues. In the kidney, distal tubular mild karyomegaly was increased in test substance-exposed animals of both sexes. In females, karyomegaly was accompanied by tubular degeneration. No other test substance-related changes were observed in the organs examined at necropsy. The test substance was concluded to be carcinogenic to the respiratory tract in both sexes. Note: QC reviewer is flagging the increased weight loss in the treated females as a potential PESS outcome.

Isomer: 1,2-Dichloroethane - Reproductive/Developmental

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
no guideline Rat; Not specified; Female	Oral: Diet 104 weeks Diet was fed 2x a day for 1 h in the day and 2 h at night. Animals were exposed prior to mating for 6 weeks, and control diet was provided during the 10 day mating period. Treatment during gestation and lactation was not specified and durations were not described. After weaning, females were placed back into communal cages and the intermittent exposure was repeated for 4-5 pregnancies. It is implied that females were exposed between pregnancies.	POD: 53 mg/kg/d (500 ppm) (NOAEL, no effects on re-pro/dev, mortality, liver, or kidney) 0, 250, 500 ppm (in air, water, or food) F0- pre-mating, 6 wk	Female rats (18/group) were administered the test substance in the diet at doses of 0, 250, or 500 ppm (corresponding to 27 and 53 mg/kg/day, calculated using average BW= 0.152 kg and mean food consumption rate of .0161 kg/d) for 6 weeks prior to mating. Rats were then cohabitated with males for 10 days for mating during which they were fed a control diet. Mating was alternating successively for a total of 7 pairings. Endpoints evaluated include number of females mated, number pregnant, number with litters, mean litter size, pup mortality and pup weight on PND0 and PND21. Data were stratified by 1st pregnancy and subsequent pregnancies. No effect on reproductive or development was reported. Other endpoints evaluated include survival, liver fat content, serum levels of cholesterol, ALT, AST, total protein, albumin, globulin, glucose, urea, uric acid. No fatty livers were observed in the treated groups and no alterations in clinical chemistry of liver or renal function were reported. No effect on survival was observed.	Exposure duration is unclear: the only certainties are that females were administered the EDC in diet for 6 weeks prior to mating and a control diet was fed for the 10 day mating period. Exposure during gestation and lactation and during the repetition for 4-5 pregnancies total was not described. It is implied that during the repeated pregnancies exposure occurred intermittently, but this is unclear.	Reproductive/Developmental: Uninformative, Hepatic/Liver: Uninformative, Mortality: Uninformative, Renal/Kidney: Uninformative	Alumot et al. 1976 194588

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors did not report which, if any, compliance guidelines were adhered to, or report if study was conducted under GLP conditions. Mouse; C57BL - [mouse]; Male	intraperitoneal 5 days/week 5 days	POD: 5 mg/kg/day (LOAEL, reproductive) 0, 5, 10, 20, 40 mg/kg-bw/day F0- pre mating, 5 days	Sexually mature male C57BL/6 mice (3/group) were administered 0, 5, 10, 20 or 40 mg/kg/day of 1,2-dichloroethane in corn oil via i.p. injection once a day for 5 days. Forty-five days after the last injection (to allow for complete turnover of spermatogenesis) males were paired with female Balb/c females. Males were classified as permanently sterile if found to be infertile for 6 months or longer. Permanently sterile males and male mice that recovered to fertility were sacrificed only after siring two consecutive litters. Endpoints evaluated included body weight, gross examination of the brain, liver and kidneys, fertility and histology on testes and epididymis including assessing spermatogenesis stages. Weight gain was not different than controls throughout the study. Gross examination of brain, liver and kidneys did not show any obvious effects of 1,2-dichloroethane. Temporary sterility (3-5 weeks) was seen in 2/3 mice and permanent sterility in 1/3 mice exposed to 5 mg/kg/day. Permanent sterility was seen in mice exposed to ≥ 10 mg/kg/day. Testicular pathology was significantly increased at 5 and 10 mg/kg/day based on a significant reduction in spermatogenesis, a significant increase in the percentage of tubules that only contained Sertoli cells and histological changes compared to control. Testis of sterile mice were atrophic and the epididymides were shrunken and deflated. Fertility-recovered males (2/3 in the 5 mg/kg/day group) displayed both active spermatogenesis and disruptions of spermatogenesis among the tubules. Preservation of the Leydig cells was observed after exposure. Due to laboratory processing error, the excised testes from the 20 and 40 mg/kg dose mice were destroyed and unavailable for histological analyses.	The study did not report how animals were allocated into groups. Storage conditions for test substance were not adequately reported.	Reproductive/Developmental: High	Daigle et al. 2009 5437237

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guideline used for this study Mouse; ICR - [mouse]; Both	Oral: Drinking water Male and females ICR mice (FO) were exposed for 5 weeks prior to mating and throughout the lactation. Exposed F0 generation was mated 3 times to generate F1/A, F1/B and F1/C (resting 2 weeks in between litters). Exposure was continuous for 25 weeks. F1 males and females were exposed after weaning for 11 week prior to mating and then throughout mating, gestation and lactation. The F1 were mated twice to generate F2/A and F2/B generation (resting 2 weeks in between litters). Exposure was continuous for 24 weeks.	POD: 50 mg/kg/day (NOAEL, reproductive/developmental) 0, 5, 15, 50 mg/kg-bw/day F0- premating, 5 week, F0- mating, during, F0 - gestation, 3 week, F0- lactation, 3 weeks, F0- post-natal, 2 weeks, F1- premating, 11 weeks, F1- mating, during, F1 - gestation, 3 weeks, F1- lactation, 3 weeks, F1- post-natal, 2 weeks	In a multi-generation reproduction study, male (n=10/group) and female (n=30/group) ICR Swiss mice were provided drinking water containing 0, 0.03, 0.09 or 0.29 mg/ml 1,2-dichloroethane for 5 weeks prior to mating and throughout pregnancy and lactation. Authors report concentrations of test substance yielded daily doses of 0, 5, 15 or 50 mg/kg/day 1,2-dichloroethane. Control groups included water only and water containing 1% Emulphor. Exposed mice were mated (1 male:3 females) for 7 days to generate F1 litter. The F0 generation was mated 3 times to generate F1/A, F1/B and F1/C groups. F1/B males (10/group) and females (30/group) were exposed after weaning for 11 weeks and ten mated. Treatment continued throughout mating, gestation and lactation. The F1/B were mated twice to generate F2/A and F2/B generations. Exposure was continuous for 25 weeks (F0) or 24 weeks (F1/B). Endpoints evaluated included adult mortality (F0 and F1/B), body weight, fluid consumption and reproductive and developmental parameters. No exposure-related differences in mortality, body weight or fluid intake were observed in adult mice. No dose-related effects on reproduction endpoints in the F0 and F1 generation (fertility, gestation, pup viability, lactation indices, pup size at birth or sex ratio) or developmental endpoints in F1 and F2 generation (pup survival, pup weight gain, gross pathology or congenital malformations) were seen.	The "dominant lethal" portion of the study had important limitations. The OECD guideline 478 for rodent dominant lethal tests recommends including enough dams to produce at least 400 implants, while this study produced under 200 implants in some groups. In addition, negative control animals in this assay had a very low fertility index. The fertility index in controls was 56.7 and 62.5 while the fertility index in historical control ICR mice range from 80-100 (https://www.crj.co.jp/cms/crj/pdf/product/trm/information/icr/CRL_Reproductive_behavioral_e). This suggests the potential for unidentified sources of confounding and making it difficult to interpret results from treated animals. In other portions of the study, the fertility rates in controls range from 70 to 90, a range that is also lower than historical controls, though less dramatic than in the dominant lethal assay.	Reproductive/Developmental: High	Lane et al. 1982 62609
No guidelines or adherence to GLP were reported. Rat; Sprague-Dawley - [rat]; Female	Inhalation: Vapor 6 hours/day 7 days/week 15 days Pregnant dams were exposed, whole body, to the test substance for 6 hrs/day, from GD 6-20.	POD: 1,030 mg/m3 (NOAEL, maternal body weights, mortality) 0, 150, 197, 254, 329 ppm (in air, water, or food) F0 - gestation, GD 6-20	See footnotes for full summary ¹	There are no major limitations for this reference.	Reproductive/Developmental, Mortality, Nutritional/Metabolic: High	Payan et al. 1995 12099

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
No guidelines or adherence to GLP were reported. Rat; Sprague-Dawley - [rat]; Female	Oral: Gavage 7 days/week 15 days Pregnant dams were dosed daily from GD6 to GD 21.	POD: 160 mg/kg/day (NOAEL, increased percentages of non-surviving implants per litter and in resorption sites per litter) 0, 1.2, 1.6, 2, 2.4mmol/kg F0 - gestation, GD 6-20	See footnotes for full summary ²	The doses were based on GD6 body weights and were not adjusted for body weight measurements throughout the study.	Reproductive/Developmental, Mortality, Nutritional/Metabolic: High	Payan et al. 1995 12099
Non guideline, GLP compliance was not specified. Rat; Sprague-Dawley - [rat]; Female	Inhalation: Vapor 7 hours/day 10 days Exposed from gestational day 6- 15. Sacrificed on gestational day 21.	POD: 405 mg/m3 (NOAEL, develop) (100 ppm) 0, 100, 300 ppm (in air, water, or food) F0 - gestation, GD6-15	Concentrations were converted using the formula (ppm * mw)/24.45 =mg/m3; (100 ppm * 98.96)/24.45 = 405 mg/m3In a teratology study, mated Sprague-Dawley rats (16-30/group) were exposed to 0, 100, 300 ppm (0, 405, 1214 mg/mg, respectively) of 1,2-dichloroethane for 7 hours/day on gestational day 6-15 via whole body inhalation. Dams were sacrificed on gestational day 21. Endpoints evaluated included clinical signs of toxicity, body weight, food consumption, number of corpora lutea, number and position of live, dead and resorbed fetuses and fetal weight, length, sex, external alteration, skeletal alteration, and cleft palate.10/16 maternal rats died at 300 ppm compared to 0/30 control and 0/30 at 100 ppm. Body weight gain during gestation was significantly greater in the 100 ppm group compared to controls (data not shown). In the 300 ppm group, decreased body weight and food consumption were seen along with lethargy, ataxia and some evidence of vaginal bleeding. Only one surviving female was pregnant at sacrifice, and all her implantations were resorbed. The embryotoxicity is considered secondary to the maternal toxicity. No fetuses were available for examination.No evidence of embryotoxicity or fetotoxicity were seen at 100 ppm. No adverse effects on incidence of pregnancy, number of litters, implantation sites/dam, fetuses/litter, resorptions, sex ratio, fetal body measurements or fetal malformations due to exposure were observed. A significant decrease in the incidence of bilobed thoracic centra was seen at 100 ppm EDC, however study states that this decreased of a minor skeletal variant is indicative of normal variation in this species and has no toxicological significance.	None.	Reproductive/Developmental, Mortality: Medium	Rao et al. 1980 5453539

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Non guideline, GLP compliance was not specified. Rabbit; New Zealand White - [rabbit]; Female	Inhalation: Vapor 7 hours/day 13 days Exposed from gestational day 6- 15. Sacrificed on gestational day 29.	POD: 1214 mg/m3 (NOAEL, develop) (300 ppm) 0, 100, 300 ppm (in air, water, or food) F0 - gestation, GD6-18	Concentrations were converted using the formula (ppm * mw)/24.45 =mg/m3; (300 ppm * 98.96)/24.45 = 1214 mg/m3 In a teratology study, artificially inseminated New Zealand whit rabbits (19-21/group) were exposed to 0, 100, 300 ppm (0, 405, 1214 mg/m3, respectively) of 1,2-dichloroethane for 7 hours/day on gestational day 6-18 via whole body inhalation. Dams were sacrificed on gestational day 29. Endpoints evaluated included clinical signs of toxicity, body weight, food consumption, number of corpora lutea, number and position of live, dead and resorbed fetuses and fetal weight, length, sex, external alteration, skeletal alteration, and cleft palate.4/21 maternal rabbits died at 100 ppm, 3/19 at 300 ppm and 0/20 in the control group (not statistically different). Body weights were not different from control (data not shown). No evidence of embryotoxicity or fetotoxicity were seen at 100 or 300 ppm. No adverse effects on incidence of pregnancy, mean litter size, sex ratio, incidence of resorptions, fetal body measurements or fetal malformations due to exposure were observed. A statistically significant decrease in the incidence of 13 ribs and lumbar spurs among litters at 100 ppm and 300 ppm was seen, however study states that this decreased of a minor skeletal variant is indicative of normal variation in this species and has no toxicological significance.	None.	Reproductive/Developmental, Mortality: Medium	Rao et al. 1980 5453539
Non guideline, GLP compliance was not specified. Rat; Sprague-Dawley - [rat]; Both	Inhalation: Vapor Prior to mating, rats were exposed for 60 days (6 hrs/day, 5 days/week)The rest of the time, exposed to 6 hrs/day, 7 days/week, except from gestational day 21-post natal day 4 maternal exposure stopped to allow for delivery and rearing of the young).Two F1 generations were evaluated (F0 bred twice).	POD: 613 mg/m3 (NOAEL, repro) (150 ppm) 0, 25, 75, 150 ppm (in air, water, or food) F0- pre-mating, 60 days (6 hrs/day, 5 days/week), F0 - gestation, 6 hrs/day, 7 days/week, F0- lactation, 6 hrs/day, 7 days/week, F0- post-natal, 21 days: 6 hrs/day, 7 days/week	See footnotes for full summary ³	Clinical signs that may have indicated that there was an infection were seen during the seventh week of the study.	Reproductive/Developmental: Medium	Rao et al. 1980 5453539

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental						
Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
Generally adherent to OECD TG 443 (Extended One-Generation Reproductive Toxicity Study; GLP compliant Rat; CrI:CD; Both	Oral: Drinking water 24 hours/day 72 days Extended 1-generation study: F0 males were exposed starting from 28 days pre-mating for a total of 92-93 days; F0 females were exposed starting 28 days prior to mating, through mating, gestation, and lactation, and were sacrificed on LD22 for a total of 72-85 days; Weaned F1 offspring were exposed from PND21 through PND 78, 92, or 120 (depending on assigned cohort). The dose concentrations listed are the target doses. Separate analytical doses were reported for males and females, for both generations.	POD: 150 mg/kg-day (target) or 97 mg/kg-day for males and 93 mg/kg-day for females (mean achieved exposure levels), (NOAEL, pup body weights and weight gain) 0, 50, 150, 300 mg/kg-bw/day F0- pre-mating, 28 days, F0- mating, 1-13 days, F0 - gestation, 22 days, F0- lactation, 22 days, F1- pre-mating, 58-100 days	See footnotes for full summary ⁴	Due to palatability issues, the achievable doses were likely not high enough to identify any clear effects related to the test substance. The effects observed in this study (decreased body weight and reduced water intake, organ weight changes etc), are all presumed to be related to palatability and subsequent dehydration.	Reproductive/Developmental: Uninformative	WIL Research Laboratories 2015 7310776
The authors did not report which, if any compliance guidelines were adhered to, or if the study was conducted under GLP conditions. Rat; Wistar - [rat]; Female	Inhalation: Vapor 6 hours/day 5 weeks Study states "Two weeks before exposure and during the gestation period, rats are exposed 6 hours daily at the DCE..." It is believed this is a typo and should be two weeks before pregnancy (not exposure).	POD: 24.8 mg/m³ (LOAEL, fetal weight and pre-implantation loss) 0, 24.8, 207.6 mg/m ³ F0- pre-mating, 2 week, F0 - gestation, 3 week	See footnotes for full summary ⁵	The inhalation chamber is not described. The study provides very limited information regarding the methods and results.	Reproductive/Developmental: Uninformative	Zhao et al. 1989 200708
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Isomer: 1,2-Dichloroethane - Reproductive/Developmental

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors did not report which, if any compliance guidelines were adhered to, or if the study was conducted under GLP conditions. Rat; Wistar - [rat]; Male	Inhalation: Vapor 4 hours/day 7 days Exposed 7 days and then mated 1,2,3 or 4 weeks after being exposed.	POD: 20 mg/mg3 (NOAEL, reproductive) 0, 20, 800 mg/m ³ F0- pre-mating, 7 days	In a dominant lethal experiment, male Wistar rats (number/group not reported) were exposed to 0, 20 or 800 mg/m ³ of 1,2-dichloroethane for seven days (4 hours/day) via inhalation (details on inhalation chamber were not reported). Male rats were then mated with non-exposed females 1, 2, 3 or 4 weeks after exposure ended. Endpoints evaluated included pregnancy rate, viable fetuses, mortality rate before and after embryo implantation and total number of corpora lutea. Mutagenic index ([the average number of viable fetuses in the exposed group/the average number of viable fetuses in the control group] x100) and total dominant mortality rate (death toll before embryo implantation - death toll after embryo implantation /total number or corpora lutea) were determined. No differences in pregnancy rate, mutagenic index or dominant mortality rate were seen in the 20 mg/m ³ group compared to control. Pregnancy rates were decreased (67.9, 67.9, 60.7 and 63%) in the 800 mg/m ³ rats compared to control rats (82.1, 96.4, 71.4, 75%) mated 1, 2, 3 and 4 weeks after exposure, respectively, but only reached significance at the 2 week timepoint. Mortality rate before embryo implantation and the total dominant mortality rate were significantly increased in the 800 mg/m ³ group mated two week after exposure, compared to control. No differences in mortality rate after embryo implantation were seen at any timepoint. Mutagenic index was also only significantly increased in the 800 mg/m ³ group mated two weeks after exposure (calculated to be 22.2, study states generally values over 15 are significant).	Methods are poorly written and do not always match what is presented in the Results.	Reproductive/Developmental: Uninformative	Zhao et al. 1989 200708

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Isomer: 1,2-Dichloroethane - Reproductive/Developmental

Guideline and Animal Species, Strain, Sex	Exposure Route and Exposure Duration	Study-wide POD and Dose/Concentration(s)	Summary	Major Limitations	Principal Target Organs/Systems and OQD*	Citation and HERO ID
The authors did not report which, if any compliance guidelines were adhered to, or if the study was conducted under GLP conditions. Mouse; hybrid; Female	Inhalation: Vapor 4 hours/day 10 days Exposed from gestational day 6-15	POD: 250 mg/m³ (NOAEL, developmental) 0, 25, 250 mg/m ³ F0 - gestation, GD6-15	Female hybrid mice (interbred mouse of Kunming and Switzerland) (number/group not reported) were exposed to 0, 25 or 250 mg/m ³ of 1,2-dichloroethane for 4 hours a day from gestational day 6-15. Endpoints evaluated included growth and development for two generations of newborn mice. The four-day survival rate and nursing survival rate of the F1 and F2 generation were not different from control (data not shown). Weight increase and growth development of newborns were not different from control (data not shown). At two months of age, no malformations in the appearance of the viscera and not significant differences among visceral organ coefficients were seen (data not shown). It is unclear if behavioral tests were performed on newborn mice or rats and what the results are. In the results section titled "Effects of DEC on newborn mouse development" the study reports greater agitation in "newborn rats" (assume a typo for "rats") and reports findings for concentrations that were studies in rats. However, later in the paper when authors are summarizing findings they report "The behavioral experiments show that the agitation of male newborn mice increases dramatically." Due to the vagueness of reporting and discrepancies within the paper, a NOEL/LOAEL was not made for this endpoint.	The inhalation chamber was not described.	Reproductive/Developmental: Uninformative	Zhao et al. 1989 200708
The authors did not report which, if any compliance guidelines were adhered to, or if the study was conducted under GLP conditions. Mouse; hybrid; Female	Inhalation: Vapor 4 hours/day 2 days Exposed from gestational day 9 and 10	POD: Uninformative-not suitable for POD determination 1000 mg/m ³ F0 - gestation, GD9 and 10	Female hybrid mice (interbred mouse of Kunming and Switzerland) (number/group not reported) were exposed to 1000 mg/m ³ of 1,2-dichloroethane for 4 hours a day from gestational day 9-10. Endpoints evaluated included structural teratology examination. No data were reported.	The inhalation chamber was not described. Data are not reported.	Reproductive/Developmental: Uninformative	Zhao et al. 1989 200708

* Overall Quality Determination

¹ 12099: Sprague-Dawley rats (26/group) were exposed, whole body, to nominal 1,2-DCE vapors at 0, 150, 200, 250, 300 ppm 6 hrs/day from GD 6 -20. Time-weight analytical concentrations were 0, 150 ±5, 197 ±8, 254 ±11, and 329 ±18 ppm, respectively). Dams were observed for mortality. Body weights were measured on Day 0, and every three days from GD 6 to 21. Uteruses were weighed and the number of implantations was recorded. Developmental endpoints included the number of resorptions and live and dead fetuses, live fetal weights, sex ratios, and examinations for external, visceral, and skeletal anomalies and malformations. Two dams died at 329 ppm; the causes of death were not specified but were considered by the study authors to be exposure-related. No significant changes in maternal body weights were observed. Body weight gain from GD6 - GD21 was reduced at 329 ppm, compared to controls. The pregnancy rate among females at 254 ppm was significantly lower than controls. However, the effect was not seen in the 329 ppm group so it was assumed not to be related to exposure. There were no significant differences in mean numbers of implantation sites, resorptions, live fetuses, fetal sex ratio, and male/female fetal weights between exposed groups and controls. Cases of kinky tail, microphthalmia, renal hypoplasia or agenesis, ectopic testis, and/or thoracic skeletal malformations were seen in a single litter from the control group. Other malformations consisted of single or two fetuses seen in the 200 or 250 ppm, as well as the control group. Incidences of external, visceral, and skeletal variations were observed but the increases were not significant. No author-reported toxicity values were provided. A maternal NOEC of 254 ppm and a LOEC of 329 ppm (1,030 and 1,330 mg/m³, respectively) were determined based on two deaths in the high-exposure group. A developmental NOEC of 329 ppm (1,330 mg/m³) was determined, based on the lack of clearly adverse developmental effects. A nutritional/metabolic NOEC of 254 ppm and a LOEC of 329 ppm (1,030 and 1,330 mg/m³, respectively) was determined due to the significant change in maternal body weights at a dose of 329 ppm. Concentrations in mg/m³ were calculated using the following formula: mg/m³ = (ppm x mw) / 24.45, where the molecular weight is 98.96 g/mol.

- ² 12099: Sprague-Dawley rats were administered 1,2-DCE via oral gavage at doses of 0, 1.2, 1.6, 2.0, and 2.4 mmol/kg (corresponding to 0, 120, 160, 200, and 240 mg/kg-day based on the MW of 98.96 g/mol). Dams were observed for mortality. Body weights were measured on Day 0, and every three days from GD 6 to 21. Uteruses were weighed and the number of implantations was recorded. Developmental endpoints included the number of resorptions and live and dead fetuses, live fetal weights, sex ratios, and examinations for external, visceral, and skeletal anomalies and malformations. No dams died during the study. Dam weight gain was significantly reduced at 200 mg/kg during GD 9 - 12, and at 240 mg/kg-day during GDs 6-9 and 9-12. Maternal absolute weight gain (defined as GD 21 bw minus gravid uterus weight, minus GD6 body weight) was significantly reduced in the top two dose groups. No effects on absolute body weights were observed. Three dams delivered on Day 20 (one day before euthanization) at 240 mg/kg-day. These litters were excluded from the final analysis. The authors noted that an increasing trend in the mean percentage of non-surviving implants per litter was significant. There was also a visible exposure-related increase in the percentage of resorption sites per litter, but no significant trend was noted. For both endpoints, the increases were only significant at 200 mg/kg-day. No other fetal or teratogenic effects were observed that were considered to be related to exposure. No author-reported toxicity values were provided, but it was noted that there was a possibility of embryotoxicity. A nutritional/metabolic NOAEL of 160 mg/kg-day (1.6 mmol/kg) and a LOAEL of 200 mg/kg-day (2.0 mmol/kg) were determined, based on significant reductions in material weight gain. A developmental NOAEL of 160 mg/kg-day and a LOAEL of 200 mg/kg-day was determined for this review based on exposure-concentration-related increases in the mean percentages of non-surviving implants per litter and in the percentages of resorption sites per litter. This study performed separate ADME experiments to assess placental transfer of the test substance, tissue distribution, and metabolic tissue profiles. The administered 1.6 mmol[14C] 1,2-dichloroethane/kg on day 12 or day 18 of gestation. 1,2-Dichloroethane passed through the placental barrier. Also, 1,2-dichloroethane can be metabolically activated to form a reactive metabolite that can react with biological molecules. Covalently linked radioactive material was found in the fetus and placenta.
- ³ 5453539: Concentrations were converted using the formula (ppm * mw)/24.2 = mg/m³; (150 ppm * 98.96)/24.2 = 613 mg/m³. In a reproduction study, male and female Sprague-Dawley rats (20-30/sex/group) were exposed to 0, 25, 75 or 150 ppm (0, 102, 305 or 613 mg/m³, respectively) of 1,2-dichloroethane via whole body inhalation for 60 days (pre-breeding), 6 hours/day, 5 days/week. The rest of the time, rats were exposed for 6 hours/day, 7 days/week (maternal exposure was stopped on gestational day 21 to postnatal day 4 to allow for delivery and rearing of the young). After 60 days of exposure F0 male and females (or each respective treatment group) were bred one-to-one to generate F1A generation. Seven days after F1A litter was sacrificed, F0 rats were bred again to produce a F1B generation. F1A and F1B were sacrificed at approximately post-natal day 21. Endpoints evaluated included mortality, clinical signs of toxicity, food consumption, and date of parturition. Pups were evaluated for sex and weight, number of live and dead pup at birth and on day 1, 7, 14 and 21, gross necropsy, kidney and liver weights, histopathology. F0 males and females were examined after weaning the F1B pups for gross pathology, liver and kidney weights and histology on liver, kidneys, ovaries, uterus and testes. In the F0 generation, during the later part of the study 1 control female, and 1 male and 1 female in the 25 ppm group died, however, upon examination it was determined these deaths were probably not related to treatment (data not shown, however there was no dose-response for the effect). No clinical signs of toxicity were seen. Body weights of F0 males and females pre-mating were not different from control, also female body weights during gestation and lactation were not different than control (data not shown). Food consumption varied sporadically in males and females but was not considered treatment related. No significant differences in fertility index, gestation days, sex ratio, neonatal body weight or growth of pups were seen. The average number of pups/litter was not different in F1A or F1B litters, except in the F1A 75 ppm group which was significantly decreased from control (13 in control vs 10 at 75 ppm). The gestation survival index in treated groups was comparable or higher than the control. External and internal examination at weaning of F1 pups did not show any unique-treatment-related anomaly. No exposure related effect in organ weights (liver and kidney) or histology (liver, kidneys, ovaries and testes) were seen in the F0 rats. No exposure related change in liver or kidney weights or histology were seen in the F1 generations.
- ⁴ 7310776: In an OECD TG 433 extended 1-generation toxicity study, Crl:CD(SD) rats (27/sex/group) were exposed daily, via drinking water, to ethylene dioxide (purity 99.97%) at target doses of 0, 50, 150, and 300 mg/kg-day beginning 28 days prior to mating, through mating for a total of 92 or 92 days (F0 males), or through gestation, and lactation until lactation day (LD) 22 (F0 females). Selected F1 offspring were exposed as described beginning on PND21 and continuing to PND 78, 92, or 120, depending on their assigned cohort. The approximate adjusted exposure concentrations for F0 males (throughout the study) and F0 females, were calculated using measured animal body weights, but historical water consumption data. Dosing during mating and gestation was maintained at the same level as the last week of the pre-mating period. During cohabitation, the drinking water supplied to both sexes contained the concentrations calculated for the females. Additional adjustments were made during early and late lactation to account for rapid increases in food consumption. From PND 21-35, F1 offspring were given water containing the same concentration of the test substance provided to F0 females during the second week of lactation. From PND35 to sacrifice, the concentrations in water were calculated based on age, historical water consumption, and measured body weights. The resulting mean test substance consumption data reported by the study authors were as follows: F0 males: 38 and 31 mg/kg-day (low dose group); 88 and 79 mg/kg-day (mid-dose group), and 183 and 155 mg/kg-day (high dose group), prior to and after mating, respectively. F0 females: 40, 42, and 67 mg/kg-day (low dose), 95, 98, and 199 (mid dose), and 182, 199, and 385 mg/kg-day (high dose), prior to mating, and during gestation, and lactation, respectively. Calculated doses in F1 offspring were 37, 97, and 184 mg/kg-day for males and 39, 93, and 169 mg/kg-day for females, in the low-, mid-, and high-dose groups, respectively. No deaths of F0 animals that were attributed to treatment were observed. The few deaths reported were considered incidental. Clinical signs included increased incidences of red material around the nose in males at ≥150 mg/kg-day in males, and at 300 mg/kg-day in females. F0 body weights were statistically significantly lower in males and females in the 150 and 300 mg/kg-day groups at several points throughout the study, but the magnitudes of change were only above 10% in males at 300 mg/kg-day (12%, final body weights). The reductions in body weight and in weight gain that were observed were attributed to reductions in water intake. In males, there were dose-related decreases in water intake throughout the study period. For example, during days 10-14, water intake was reduced by 19%, 36%, and 39% in the low-, mid-, and high-dose groups, respectively, compared to controls. During gestation (day 0-20), water intake (g/kg/day) of F0 females was decreased by 3%, 24%, and 23%, in the low-, mid-, and high-dose groups, respectively. During lactation, although high-dose F0 females consumed less water, the difference compared to controls was < 16%. Slight reductions in food consumption that were generally dose-dependent were observed in males (throughout the study) and females (pre-breeding only) at ≥ 150 mg/kg-day and corresponded with the lower mean body weight gains. No adverse hematological, coagulation, or serum chemistry changes were observed. Although some changes reached statistical significance, they fell within historical control ranges, had no microscopic correlations, and were not considered to be related to treatment. Test-related urinalysis changes included higher specific gravity in males at 300 mg/kg-day and lower pH at ≥150 mg/kg-day. These also purportedly fell within the range of historical controls. Thyroid hormones (T4 and TSH) were unchanged in F0 males. Organ weight data in males and females were confounded by the reductions in water and food intake, and thus body weights in treated animals. Significant organ weight changes generally reflected the decreases in body weights (e.g., increased relative, but not absolute, or decreased absolute, but not relative organ weights). The increased relative (but not absolute) liver weights in mid-, and high-dose females, exceeded the historical control range, but the magnitudes of change were small (<10%) and no correlating microscopic effects were observed. There were no notable macroscopic or microscopic findings in any F0 group. No effects on reproductive performance, parturition or gestation length were observed. Measured sperm parameters in treated males were comparable to the controls. No other clinical signs were observed. Litter data (the number of live-born pups, litter size, sex ratio, or survival (up to PND 21) were unaffected by treatment. PND 4-21 pup body weights were lower in males (10.56%) and females (10.66%) in the 300 mg/kg-day group. In pups culled on PND4, there were no notable macroscopic findings or changes to thyroid hormones. In pups culled on PND21, statistically significant changes in thyroid hormones included increased T4 in 300 mg/kg-day males and females, and decreased TSH in males from all treatment groups, and in females at 300 mg/kg-day. The study noted the values fell within the historical control range, and that the changes were likely associated indirectly with final body weights. There were no organ weight changes or gross findings in the pups culled on PND21. During the post-weaning period (PND 21-PND 28), mid-, and high-dose mean F1 body weights were generally lower in males than in controls (up to 13% in both sexes at 300 mg/kg-day). There was also a significant delay in the age of balanopreputial separation (47.1 days) in the 300 mg/kg-day group, relative to controls (45.3 days). The body weight changes fell within the range of historical controls, and the delayed attainment of balanopreputial separation was attributed to the lower mean body weights in that group. There were no effects on the age of vaginal patency or first estrous. No adverse treatment-related neurobehavioral effects in post-weaning offspring were observed. All mortality in F1 offspring was considered to be incidental. Similar to F0 animals, F1 offspring showed red material

around the nose at ≥ 150 mg/kg-day (males) and 300 mg/kg-day (females). If F1 adults were significantly decreased up to 5.7%, 10.8%, and 17.6%, in males at 50, 150, and 300 mg/kg-day, and mean body weight gains were also lower in all dose groups. Body weights in females were significantly reduced only at 300 mg/kg-day, but the magnitude of change was low (5.1 to 8.6%). The study authors noted this was likely due to dehydration resulting from reduced water consumption and not indicative of systemic toxicity. Like the F0 generation, water intake was lower in all treatment groups, compared to controls throughout the post-weaning period, and food consumption in males was decreased at the high dose. Changes in other systemic endpoints evaluated in F1 adults (estrous cycle, sperm parameters, hematology and coagulation, clinical chemistry, and urinalysis), either fell within historical controls, or were not directionally relevant (e.g., lower creatinine instead of increase), or were not correlated to microscopic changes (urine changes) and therefore were considered nonadverse. At sacrifice, no effects on thyroid hormones were observed. Similar to the F0 generation, observed organ weight changes were considered a result of test substance-related effects on the final body weights. No notable macroscopic or microscopic changes, including from a detailed examination of neurological tissues, were observed. The author reported toxicity values were as follows: A systemic NOAEL of 50 mg/kg-day (target) or 31 mg/kg-day for F0 males, 40 mg/kg-day for F0 females, and 37 mg/kg-day for F1 males (the actual lowest mean achieved exposure levels), and a target of 150 mg/kg-day (93 mg/kg-day actual) for F1 females, based on decreased mean body weights and water intake. These data are confounded by issues with palatability leading to partial dehydration. A reproductive NOAEL of 300 mg/kg-day (highest target dose), or 155 mg/kg-day for F0 males and 182 mg/kg-day for F0 females, based on the absence of reproductive toxicity. A developmental NOAEL was 150 mg/kg-day (target) or 97 mg/kg-day for males and 93 mg/kg-day for females (mean achieved exposure levels), based on lower F1 male and female body weights and body weight gain. The NOAEL for F1 neurotoxicity was 300 mg/kg-day (target) based on the lack of neurological effects.

- ⁵ 200708: Female Wistar rats (number/group not reported) were exposed to 0, 24.8 or 207.6 mg/m³ of 1,2-dichloroethane for 6 hours a day. Study states "Two weeks before exposure and during the gestation period, rats are exposed 6 hours daily at the DCE..." It is believed this is a typo and should read: Two weeks before pregnancy and during the gestation period.. Endpoints were evaluated in pregnant dams (growth rats, hematology, serum ALT [GPT] and AST [GOT] and urinary protein levels), also for fetal rat development (mortality rate before rat embryo implantation, weight of fetal rat and teratology) and newborn development (four-day survival rate and nursing survival rate and body weight). No significant differences were seen in the pregnant rats' weight growth rates, pregnancy rates, red blood cell counts, hemoglobin contents, urine protein contents, serum ALT or AST compared to control (data not shown). The mortality rate before embryo implantation was significantly higher in the 207.6 mg/m³ group compared to control (31%:10.2). The average weight of the male fetal rats were significantly decreased at 24.8 mg/m³ compared to control (3.9g vs 4.4g) (data not reported for 207.6 mg/m³ group). The occurrence rate of the fetal rat's sternum in seven pieces was 5.4% and considered by authors as high (no control data is reported). No malformation of the skeleton or viscera were seen. One case of cleft palate appeared in the 24.8 mg/m³ group (number of rats studied were not reported). The four-day survival rate, nursing survival rate, weight increase and grown development of newborns were not different from control. It is unclear if behavioral tests were performed on newborn mice or rats and what the results are. In the results section titled "Effects of DEC on newborn mouse development" the study reports greater agitation in "newborn rates" (assume a typo for "rats") and reports findings for concentrations that were studies in rats. However, later in the paper when authors are summarizing findings they report "The behavioral experiments show that the agitation of male newborn mice increases dramatically." Due to the vagueness of reporting and discrepancies within the paper, a NOAEL/LOAEL was not made for this endpoint.

Epidemiology Extraction Table: Cancer/Carcinogenesis

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
invasive breast cancer Study Design: Cohort (Prospective) Health Effect: Cancer/Carcinogenesis	adults female A group of 112,378 female participants from the California Teacher Study cohort, California, 1995-2011	approximate median concentration of ethylidene dichloride (1,1-dichloroethane) is between 1E-4 and 1E-2 (estimated from Figure 1), exposure groups were classified into 5 quintiles	An increase in the risk for breast cancer was observed for Quintile 3 when compared with Quintile 1 (OR 1.09, 95% CI 1.00-1.18) when results were adjusted for age and race; however, this increase was not observed for Quintiles 4 or 5, and the p(trend) for Quintiles 2-5 was not significant (0.19). An increase in tumor hormone responsiveness to estrogen-receptor positive or progesterone receptor positive risk was observed when compared to all tumor types for Quintile 3 (OR 1.2, 95% CI 1.09-1.32) and Quintile 4 (OR 1.15, 95% CI 1.05-1.27), p(trend) 0.029, when compared with Quintile 1; results were not significant for Quintile 5. The hazard risk ratio was significantly increased among past or never hormone therapy users for Quintile 4 (OR 1.35, 95% CI 1.11-1.64) and was increased for Quintile 5 but not significant (OR 1.28, 95% CI 1.05-1.56), with a significant p(trend) of 0.002.	High	Garcia et al. 2015 3014082
overall breast cancer (ductal carcinoma in situ (DCIS) and invasive combined), invasive ER+ and invasive ER- breast cancer Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	adults female 49,718 women from the Sister Study (United States), 35–74 years at enrollment, follow-up 8 years	Ethylidene Dichloride (1,1-Dichloroethane), Mean = $6.49 \times 10^{-4} \mu\text{g}/\text{m}^3$	No significant dose-response trend was observed in single pollutant analyses for ethylidene dichloride, but a classification tree identified combinations of ethylidene dichloride, age, BMI, and five other chemicals related to overall breast cancer.	Medium	Niehoff et al. 2019 5440630

Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Acute gastrointestinal diseases, acute gastritis and chronic gastritis. Study Design: Cohort (Retrospec- tive) Health Effect: Gastrointestinal	occupational female 27 Russian workers in air- craft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Acute gastritis: N=13 cases per 100 workers in 1954 and n=8 cases per 100 workers in 1955. Chronic gastritis: N=6 cases per 100 workers in 1954 and n=3 cases per 100 workers in 1955. Case numbers per 100 workers in the plant and shop reported for acute gastrointestinal disease. Total study population number not reported, thus limit- ing interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Hepatic/Liver

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Liver and gall bladder disease. Study Design: Cohort (Retrospec- tive) Health Effect: Hepatic/Liver	occupational female 27 Russian workers in air- craft plant, 1951-1955, age not reported. Sample size for total study population not reported.	Dichloroethane, (mg/L), 0.05	Number of cases reported for liver and gall bladder disease: 21 per 100 workers in 1954, and 24 cases per 100 workers in 1955. Total study population number not reported, thus limiting interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Musculoskeletal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Diseases of the muscles, tendons, and ganglia and changes in motor function of upper extremities. Study Design: Cohort (Retrospec- tive) Health Effect: Musculoskeletal	occupational female 27 Russian workers in air- craft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Muscle, tendon, ganglia cases: N=48 cases per 100 workers in 1954 and n=8 cases per 100 workers in 1955. Qualitative reporting of decreased motor function in upper extremities among the exposed. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Neurological/Behavioral					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Central nervous system functioning. Study Design: Cohort (Retrospective) Health Effect: Neurological/Behavioral	occupational female 27 Russian workers in aircraft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Visual-motor reaction, upper extremity motor function decreased with dichloroethane exposure. Exposed making reaction errors = 15/17; unexposed reaction making errors = 4/10. Motor function decreases qualitatively reported. Case numbers only reported for neuritis and radiculitis. Statistical analyses were not conducted. Comments: Very limited detail on study population for reported case numbers.	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Other					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Overall morbidity and other dis- eases. Study Design: Cohort (Retrospec- tive) Health Effect: Other (Morbidity)	occupational female 27 Russian workers in air- craft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Case numbers per 100 workers in the plant and shop reported for overall morbidity and other dis- eases from 1951-1955. Total study population number not reported, thus limiting interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Reproductive/Developmental

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
birth defects (neural tube defects, limbs deficiencies, oral cleft defects, heart defects) Study Design: Case-Control Health Effect: Reproductive/Developmental	adults female 305,090 mothers in Texas, for births occurring in 1996-2008	1,1-dichloroethane, exposure risk value calculated by Emission Weighted Proximity Model, which assigns a risk value to each subject based on residential proximity to emission sources and annual pounds of chemical emitted. No summary statistics provided on raw amount of exposure.	In women of all ages, exposure risk values greater than 0 were also positively associated with spina bifida OR = 1.70 (1.06, 2.71), septal heart defects OR=1.23 (CI 1.10, 1.37)	High	Brender et al. 2014 2799700
invasive breast cancer Study Design: Cohort (Prospective) Health Effect: Reproductive/Developmental	adults female A group of 112,378 female participants from the California Teacher Study cohort, California, 1995-2011	approximate median concentration of ethyldene dichloride (1,1-dichloroethane) is between 1E-4 and 1E-2 (estimated from Figure 1), exposure groups were classified into 5 quintiles	An increase in the risk for breast cancer was observed for Quintile 3 when compared with Quintile 1 (OR 1.09, 95% CI 1.00-1.18) when results were adjusted for age and race; however, this increase was not observed for Quintiles 4 or 5, and the p(trend) for Quintiles 2-5 was not significant (0.19). An increase in tumor hormone responsiveness to estrogen-receptor positive or progesterone receptor positive risk was observed when compared to all tumor types for Quintile 3 (OR 1.2, 95% CI 1.09-1.32) and Quintile 4 (OR 1.15, 95% CI 1.05-1.27), p(trend) 0.029, when compared with Quintile 1; results were not significant for Quintile 5. The hazard risk ratio was significantly increased among past or never hormone therapy users for Quintile 4 (OR 1.35, 95% CI 1.11-1.64) and was increased for Quintile 5 but not significant (OR 1.28, 95% CI 1.05-1.56), with a significant p(trend) of 0.002.	High	Garcia et al. 2015 3014082

Epidemiology Extraction Table: Cancer/Carcinogenesis					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Brain tumors. Study Design: Case-Control Health Effect: Cancer/Carcinogenesis	occupational male 21 cases and 160 control deceased former employees of the Union Carbide Corporation in Texas City, Texas, June 1979, all males.	Ethylene dichloride (1,2-dichloroethane), exposed/unexposed.	No statistically significant difference in exposure between cases and controls.	Medium	Austin et al. 1983 32901
Brain tumors. Study Design: Case-Control Health Effect: Neurological/Behavioral	occupational male 21 cases and 160 control deceased former employees of the Union Carbide Corporation in Texas City, Texas, June 1979, all males.	Ethylene dichloride (1,2-dichloroethane), exposed/unexposed.	No statistically significant difference in exposure between cases and controls.	Medium	Austin et al. 1983 32901
Brain tumors Study Design: Case-Control Health Effect: Neurological/Behavioral	occupational male 21 cases and 160 control deceased former employees of the Union Carbide Corporation in Texas City, Texas, June 1979, all males	trichloroethane, exposed/unexposed	No statistically significant difference in exposure between cases and controls	Medium	Austin et al. 1983 32901
All cancer (excluding non-melanoma skin cancer) Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male & female Workers at a chemical manufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers	1,2-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population)	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 observed versus 22.9 expected cases). The statistical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention female specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017
Pancreatic cancer Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to Kanawaha Valley group (unexposed), by duration of assignments: <2 years: 0 (N/A); 2-9 years: 5.56 (1.74 - 17.65), p<0.05; 10-20 years: 11.21 (3.52 - 35.75), p<0.05; >20 years: 17.80 (4.31 - 73.42), p<0.05; p-trend 0.000 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
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Epidemiology Extraction Table: Cancer/Carcinogenesis					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Lymphatic and hematopoietic cancer Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to Kanawaha Valley group (unexposed), by duration of assignments: <2 years: 2/01 (0.50 - 8.12); 2-9 years: 2.97 (0.94 - 9.34); 10-20 years: 6.00 (1.90 - 18.99), p<0.05; >20 years: 0 (N/A); p-trend 0.002 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
Leukemia Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to Kanawaha Valley group (unexposed), by duration of assignments: <2 years: 2.71 (0.38 - 19.56); 2-9 years: 2.65 (0.36 - 19.21); 10-20 years: 10.09 (2.45 - 41.53), p<0.05; >20 years: 0 (N/A); p-trend 0.003 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
Pancreatic cancer Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to the ethylene oxide group (worked in the ethylene oxide group but never in the chlorohydrin unit), by duration of assignments: <2 years: 0 (N/A); 2-9 years: 10.48 (1.77-61.97), p<0.05; 10-20 years: 34.73 (3.95 - 305.56), p<0.05; >20 years: 38.26 (4.07 - 359.57), p<0.05; p-trend 0.000 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
Lymphatic and hematopoietic cancer Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to the ethylene oxide group (worked in the ethylene oxide group but never in the chlorohydrin unit), by duration of assignments: <2 years: 4.79 (68-33.82); 2-9 years: 5.46 (1.23 - 24.19), p<0.05; 10-20 years: 20.02 (2.34 - 171.02), p<0.05; >20 years: 38.26 (4.07 - 359.57), p<0.05; p-trend 0.000 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
Leukemia Study Design: Cohort (Retrospective) Health Effect: Cancer/Carcinogenesis	occupational male 278 men assigned to departments producing or using chlorohydrin (1,2-dichloroethane was produced as a byproduct)	1,2-dichloroethane	RR (95% CI) of cancer mortality among workers in the chlorohydrin unit compared to the ethylene oxide group (worked in the ethylene oxide group but never in the chlorohydrin unit), by duration of assignments: <2 years: 2.89 (0.21 - 39.81); 2-9 years: 2.35 (0.23 - 23.76); 10-20 years: 19.74 (1.72 - 226.78), p<0.05; >20 years: 0 (N/A); p-trend 0.144 Comments: Table 3	Uninformative	Benson and Teta 1993 200224
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Epidemiology Extraction Table: Cancer/Carcinogenesis					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Malignant neoplasms of the pancreas Study Design: Cohort (Retrospective) Health Effect: Mortality	occupational male nan	nan	SMR (95% CI): 492 (158 - 1140). p <0.01 Comments: Table 2	Uninformative	Benson and Teta 1993 200224
Lymphatic and hematopoietic tissue Study Design: Cohort (Retrospective) Health Effect: Mortality	occupational male nan	nan	SMR (95% CI): 294 (127 - 580). p <0.05 Comments: Table 2	Uninformative	Benson and Teta 1993 200224
Mortality from non-Hodgkin's lymphoma Study Design: Case-Control (Nested) Health Effect: nan	occupational male 52 deaths from non-Hodgkin's lymphoma (1940-1978) and 260 controls from cohort of chemical manufacturing workers in West Virginia	Exposure (yes/no) to specific chemicals based on linkage between employee work assignments and history of departmental usage of the chemical	No association (OR = 0.3 based on 1 case) for 1,2-dichloroethane	Medium	Union Carbide 1989 5451581
Mortality from multiple myeloma Study Design: Case-Control (Nested) Health Effect: Cancer/Carcinogenesis	occupational male 20 deaths from multiple myeloma (1940-1978) and 100 controls from cohort of chemical manufacturing workers in West Virginia	Exposure (yes/no) to specific chemicals based on linkage between employee work assignments and history of departmental usage of the chemical	No cases of multiple myeloma among subjects exposed to 1,2-dichloroethane	Medium	Union Carbide 1989 5451581
Mortality from nonlymphocytic leukemia Study Design: Case-Control (Nested) Health Effect: Cancer/Carcinogenesis	occupational male 39 deaths from nonlymphocytic leukemia (1940-1978) and 195 controls from cohort of chemical manufacturing workers in West Virginia	Exposure (yes/no) to specific chemicals based on linkage between employee work assignments and history of departmental usage of the chemical	Nonsignificant increased OR (1.9 for ever/never exposed based on 5 cases) for nonlymphocytic leukemia; 4 of 5 cases were among those with 5+ years of exposure to 1,2-dichloroethane (OR = 7.1).	Medium	Union Carbide 1989 5451581
Mortality from lymphocytic leukemia Study Design: Case-Control (Nested) Health Effect: Cancer/Carcinogenesis	occupational male 18 deaths from lymphocytic leukemia (1940-1978) and 90 controls from cohort of chemical manufacturing workers in West Virginia	Exposure (yes/no) to specific chemicals based on linkage between employee work assignments and history of departmental usage of the chemical	No cases of lymphocytic leukemia among subjects exposed to 1,2-dichloroethane	Medium	Union Carbide 1989 5451581
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Epidemiology Extraction Table: Cancer/Carcinogenesis					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
renal cell carcinoma Study Design: Case-Control Health Effect: Cancer/Carcinogenesis	occupational male & female A group of 438 cases (273 men and 165 women) were selected from the Minnesota Cancer Surveillance System, Minnesota, US, 1988-1990	The prevalence of exposure to 1,2-dichloroethane in men was 10% and 8% in cases and controls, respectively, in women was 9% and 4% in cases and controls, respectively, and 9% and 7% in cases and controls, respectively, in all participants. Exposure estimates for each group were not provided.	No significant increase in the risk of renal cell carcinoma was observed with exposure to 1,2-dichloroethane among men (OR 1.13, 95% CI 0.7-1.9) or women (OR 2.34, 95% CI 0.9-5.9) separately, or for all participants exposed (OR 1.37, 95% CI 0.9-2.2).	Medium	Dosemeci et al. 1999 4697224
invasive breast cancer Study Design: Cohort (Prospective) Health Effect: Cancer/Carcinogenesis	adults female A group of 112,378 female participants from the California Teacher Study cohort, California, 1995-2011	approximate median concentration of ethylene dichloride (1,2-dichloroethane) is between 1E-4 and 1E-2 (estimated from Figure 1), exposure groups were classified into 5 Quintiles	No significant increase in the estimated hazard rate ratio for invasive breast cancer was observed with Quintile 2-5 exposure estimates for 1,2-dichloroethane, adjusted for age and race, when compared against Quintile 1. The OR (95% CI) for Quintiles 2, 3, 4, and 5 are as follows, respectively: 1.04 (0.95-1.12), 0.94 (0.86-1.02), 1.04 (0.96-1.13), and 1.05 (0.97-1.14), p(trend) 0.25. There were no significant changes when the models were further adjusted using multiple comparisons.	High	Garcia et al. 2015 3014082
Pancreatic cancer mortality Study Design: Case-Control Health Effect: Cancer/Carcinogenesis	occupational male & female Decedents from 24 states (63,097 cases; 252,386 controls)	Intensity and probability of exposure to 1,2-Dichloroethane estimated from listed occupation/industry and applied job matrix.	Very slight statistically significant association for Black females with estimated low intensity of exposure.	High	Kernan et al. 1999 194820
overall breast cancer (ductal carcinoma in situ (DCIS) and invasive combined), invasive ER+ and invasive ER- breast cancer Study Design: Cohort (Prospective) Health Effect: Cancer/Carcinogenesis	adults female 49,718 women from the Sister Study (United States), 35-74 years at enrollment, follow-up 8 years	Ethylene Dichloride (1,2-Dichloroethane), Mean = $3.69 \times 10^{-3} \mu\text{g}/\text{m}^3$	There was evidence of effect modification by BMI, on the additive and multiplicative scales, for the association between ethylene dichloride and breast cancer ($p = 0.02$ for interaction).	Medium	Niehoff et al. 2019 5440630
Death due to soft-tissue sarcoma. Study Design: Case-Control (Nested) Health Effect: Cancer/Carcinogenesis	occupational male & female 37,000 workers at a chemical production facility who worked at least 1 year between January 1940-December 1979.	Ethylene dichloride, Occupational exposure (not quantified).	1 case of soft-tissue sarcoma (6 matched controls); OR = 1.61 (95% CI: 0.16-16.35); no significant association was reported.	Medium	Sobel et al. 1987 1357737

Epidemiology Extraction Table: Endocrine					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Pancreatic cancer mortality Study Design: Case-Control Health Effect: Endocrine	occupational male & female Decedents from 24 states (63,097 cases; 252,386 con- trols)	Intensity and probability of ex- posure to 1,2-Dichloroethane estimated from listed occupa- tion/industry and applied job matrix.	Very slight statistically significant association for Black females with estimated low intensity of exposure.	High	Kernan et al. 1999 194820

Epidemiology Extraction Table: Gastrointestinal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Digestive system cancer and colorectal cancer. Study Design: Cohort (Retrospective) Health Effect: Gastrointestinal	occupational male & female Workers at a chemical manufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2,-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 observed versus 22.9 expected cases). The statistical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention female specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017
Acute gastrointestinal diseases, acute gastritis and chronic gastritis. Study Design: Cohort (Retrospective) Health Effect: Gastrointestinal	occupational female 27 Russian workers in aircraft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Acute gastritis: N=13 cases per 100 workers in 1954 and n=8 cases per 100 workers in 1955. Chronic gastritis: N=6 cases per 100 workers in 1954 and n=3 cases per 100 workers in 1955. Case numbers per 100 workers in the plant and shop reported for acute gastrointestinal disease. Total study population number not reported, thus limiting interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Hepatic/Liver

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
blood concentrations of AST, ALT, and GGT. Study Design: Cohort Health Effect: Hepatic/Liver	occupational male 251 male workers from 4 vinyl chloride manufacturing plants (mean age 39.0 years), location and year not provided.	Personal and area air sampling were used to determine vinyl chloride monomer and ethylene dichloride occupational exposure. Participants were classified into 3 groups, low-EDC-low-VCM (0.17-0.52 ppm EDC, 0.25-0.40 ppm VCM), mod-EDC-low-VCM (0.17-33.7 ppm EDC, 0.18-0.34 ppm VCM), and low-EDC-mod-VCM (0.16-0.72 ppm EDC, 0.15-41.04 ppm VCM).	Abnormal levels of AST (>37 IU/L) and ALT (>41 IU/L) (OR=2.2 (1.0-5.4) and 2.1 (1.1-4.2), respectively) were reported in the mod-EDC-low-VCM group when compared with low-EDC-low-VCM group.	Medium	Cheng et al. 1999 200266
Liver and gall bladder disease. Study Design: Cohort (Retrospective) Health Effect: Hepatic/Liver	occupational female 27 Russian workers in aircraft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Number of cases reported for liver and gall bladder disease: 21 per 100 workers in 1954, and 24 cases per 100 workers in 1955. Total study population number not reported, thus limiting interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Immune/Hematological

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Lymphatic and hematopoietic tissue cancer. Study Design: Cohort (Retrospec- tive) Health Effect: Im- mune/Hematological	occupational male & female Workers at a chemical man- ufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2,-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 ob- served versus 22.9 expected cases). The statis- tical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention fe- male specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017

Epidemiology Extraction Table: Lung/Respiratory					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Respiratory cancer. Study Design: Cohort (Retrospec- tive) Health Effect: Lung/Respiratory	occupational male & female Workers at a chemical man- ufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 ob- served versus 22.9 expected cases). The statis- tical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention fe- male specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017

Epidemiology Extraction Table: Mortality

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
All-cause mortality. Study Design: Cohort (Retrospective) Health Effect: Mortality	occupational male & female Workers at a chemical manufacturing unit compared to the general United States population (1979-2003), United States, 251 exposed workers.	1,2,-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general U.S. population)	Observed deaths were lower than expected deaths (29 observed, 34.1 expected). Statistical significance was not stated. Comments: While the text does not mention female specifically, comparisons of observed versus expected deaths were adjusted for age and gender.	Medium	BASF 2005 6570017
mortality (all cause, cirrhosis of liver, nonmalignant respiratory disease) and cancer mortality (digestive organs, respiratory system, kidney and urinary organs, bladder, skin, brain, and lymphatic and hemopoietic tissue). Study Design: Cohort (Retrospective) Health Effect: Mortality	occupational male 7849 white male employees of a petrochemical plant (Texas), 1950-1983.	Occupational exposure to 1,2-DCA.	Hourly worker = (all cause mortality SMR: 88, 95% CI: 83-93, $p < 0.05$; nonmalignant respiratory disease SMR 71, 95% CI: 54-93, $p < 0.05$; cirrhosis of liver SMR: 32, 95% CI: 17-53, $p < 0.05$) and cancer mortality (digestive organs SMR: 96, 95% CI: 75-120; respiratory system SMR: 94, 95% CI: 77-114; kidney and urinary organs SMR: 83, 95% CI: 31-182; bladder SMR: 94, 95% CI: 64-204; skin SMR: 167, 95% CI: 67-344; brain SMR: 181, 95% CI: 106-289, $p < 0.05$; lymphatic and hematopoietic tissue SMR: 93, 95% CI: 61-135). Salaried worker = (all cause mortality SMR: 65, 95% CI: 54-77, $p < 0.05$; nonmalignant respiratory disease SMR 10, 95% CI: 0.3-58, $p < 0.05$; cirrhosis of liver SMR: 28, 95% CI: 3-102) and cancer mortality (digestive organs SMR: 100, 95% CI: 48-183; respiratory system SMR: 87, 95% CI: 47-149). Comments: Not all results were extracted; SMR results in tables 2, 3 and 5 may be potentially useful to be extracted.	Medium	Teta et al 1992 200633

Epidemiology Extraction Table: Musculoskeletal

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Diseases of the muscles, tendons, and ganglia and changes in motor function of upper extremities. Study Design: Cohort (Retrospec- tive) Health Effect: Musculoskeletal	occupational female 27 Russian workers in air- craft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Muscle, tendon, ganglia cases: N=48 cases per 100 workers in 1954 and n=8 cases per 100 workers in 1955. Qualitative reporting of decreased motor function in upper extremities among the exposed. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Neurological/Behavioral					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Brain tumors Study Design: Case-Control Health Effect: Cancer/Carcinogenesis	occupational male 21 cases and 160 control deceased former employees of the Union Carbide Corporation in Texas City, Texas, June 1979, all males.	trichloroethane, exposed/unexposed.	No statistically significant difference in exposure between cases and controls.	Medium	Austin et al. 1983 32901
Neurobehavioral effects Study Design: Cohort Health Effect: Neurological/Behavioral	occupational male & female 137 hazardous clean-up workers in the Southern United States (76 Caucasian and 61 African American), 2000.	Exposure assessed by self-reported nature (e.g., skin becoming wet, smelling odors) and frequency of contact during clean-up activities.	Significant impairments on tests of attention, concentration, processing speed, verbal memory and learning, motor coordination and speed, vision, and mood were reported for exposed workers; there was no effect on verbal naming. Significant exposure relationships for specific exposure variables and 18 and 14 neurophysiological tests (for African Americans and Caucasians, respectively).	Uninformative	Bowler et al. 2003 200241
Central nervous system functioning. Study Design: Cohort (Retrospective) Health Effect: Neurological/Behavioral	occupational female 27 Russian workers in aircraft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Visual-motor reaction, upper extremity motor function decreased with dichloroethane exposure. Exposed making reaction errors = 15/17; unexposed reaction making errors = 4/10. Motor function decreases qualitatively reported. Case numbers only reported for neuritis and radiculitis. Statistical analyses were not conducted. Comments: Very limited detail on study population for reported case numbers.	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Other

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Other cancers (not specified). Study Design: Cohort (Retrospective) Health Effect: Other (Other cancers (not specified))	occupational male & female Workers at a chemical manufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 observed versus 22.9 expected cases). The statistical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention female specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017
Self-reported symptoms of "sick building syndrome" including neurological (dizziness, headaches), skin (rash, itch), ocular (itchy or painful), musculoskeletal (muscle pain), and irritation (nasal, sore throat) occurring at any time after moving into the home. All symptoms were grouped for analysis. Study Design: Cross-Sectional Health Effect: Other (sick building syndrome)	adults male & female Dailin China; 59 men and 50 women (from same household) from a housing estate; August 2007.	1,2-dichloroethane: Median 2.3 ug/m3 (bedroom of residents with symptoms) or 1.1 ug/m3 (residents without symptoms). Air concentration in bedroom, kitchen, and outdoors measured by 24-hr diffusion sampling and analyzed by GC/MS	Bedroom air concentrations in men and women with symptoms were significantly higher ($p < 0.05$) than in bedrooms of residents without symptoms. Median 2.0 ug/m3 (bedroom of residents with symptoms) or 1.0 ug/m3 (residents without symptoms).	Uninformative	Guo et al. 2013 1938385
Overall morbidity and other diseases. Study Design: Cohort (Retrospective) Health Effect: Other (Morbidity)	occupational female 27 Russian workers in aircraft plant, 1951-1955, age not reported. Sample size or N for total study population not reported.	Dichloroethane, (mg/L), 0.05	Case numbers per 100 workers in the plant and shop reported for overall morbidity and other diseases from 1951-1955. Total study population number not reported, thus limiting interpretability of results. Statistical analyses were not conducted. Comments: Limited information on included study population, including sex of workers in the plant (likely male and female, but not clearly stated).	Uninformative	Kozik 1957 18135

Epidemiology Extraction Table: Renal/Kidney

Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Urinary system cancer. Study Design: Cohort (Retrospective) Health Effect: Renal/Kidney	occupational male & female Workers at a chemical manufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 observed versus 22.9 expected cases). The statistical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention female specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017
renal cell carcinoma Study Design: Case-Control Health Effect: Renal/Kidney	occupational male & female A group of 438 cases (273 men and 165 women) were selected from the Minnesota Cancer Surveillance System, Minnesota, US, 1988-1990	The prevalence of exposure to 1,2-dichloroethane in men was 10% and 8% in cases and controls, respectively, in women was 9% and 4% in cases and controls, respectively, and 9% and 7% in cases and controls, respectively, in all participants. Exposure estimates for each group were not provided.	No significant increase in the risk of renal cell carcinoma was observed with exposure to 1,2-dichloroethane among men (OR 1.13, 95% CI 0.7-1.9) or women (OR 2.34, 95% CI 0.9-5.9) separately, or for all participants exposed (OR 1.37, 95% CI 0.9-2.2).	Medium	Dosemeci et al. 1999 4697224

Epidemiology Extraction Table: Reproductive/Developmental					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Prostate cancer. Study Design: Cohort (Retrospec- tive) Health Effect: Reproduc- tive/Developmental	occupational male & female Workers at a chemical man- ufacturing unit compared to the general South Louisiana population (1979-2003), United States, 251 exposed workers.	1,2,-Dichloroethane (exposed: working for at least 3 months in the unit where exposure may occur, unexposed: general South Louisiana population).	Observed all-cause cancer incidence was higher than expected all-cause cancer incidence (31 ob- served versus 22.9 expected cases). The statis- tical significance of this finding was not stated. Observed cases of specific forms of cancer were generally higher than expected cases. For most specific cancer results, SIRs were not provided and the text implied that results were not statistically significant. The one exception was prostate cancer (SIR: 2.2; 95% CI: 1.1-3.9). Comments: While the text does not mention fe- male specifically, comparisons of observed versus expected all-cause cancer incidence were adjusted for age and gender.	Medium	BASF 2005 6570017
Fetal growth and development: -Birthweight (term births), low birthweight (term births), very low birthweight, small for ges- tational age-Preterm birth-Fetal death (>20 weeks' gestation)- Congenital anomalies: (i) nervous system (central nervous system, neural tube defects); (ii) oral cleft; (iii) cardiovascular (total cardiac, major cardiac, ventricular septum defects); and (iv) any surveillance defect excluding chromosomal de- fects. Study Design: Cohort (Retrospec- tive) Health Effect: Reproduc- tive/Developmental	infants (birth to 2y) male & female 80,938 live births and 594 fetal deaths that occurred in 75 NJ towns during the period 1985-1988. Data came from birth certificates, fetal death certificates (> 20 weeks' gestation) and the NJ Birth Defects Registry.	1,2-dichloroethane: 1.8% of the study sample were exposed to > 1 ppb.	No significant associations. Odds ratios > 1.5 included: 1,2-dichloroethane > 1 ppb = 2.11 (90% CI 0.75, 12.51) for major cardiac defects.	Medium	Bove, 1996 200239
-Congenital anomalies: (i) nervous system (central nervous system, neural tube defects); (ii) oral cleft; (iii) cardiovascular (total cardiac, major cardiac, ventricular septum defects); and (iv) any surveillance defect excluding chromosomal defects. Study Design: Cohort (Retrospec- tive) Health Effect: Reproduc- tive/Developmental	infants (birth to 2y) male & female 80,938 live births and 594 fetal deaths that occurred in 75 NJ towns during the period 1985-1988. Data came from birth certificates, fetal death certificates (> 20 weeks' gestation) and the NJ Birth Defects Registry.	1,2-dichloroethane: 1.8% and 1.7% exposed to > 1ppb in the 1st trimester and entire preg- nancy, respectively. Average maximum exposures 19 ppb 1st trimester, 8 ppb entire preg- nancy.	Results: no significant associations. Odds ratios> 1.5 for 1,2-dichloroethane > 1 ppb: (OR = 2.11 ; 90% CI: 0.75-12.51) for major cardiac defects.	Medium	Bove et al., 1995 194932

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Epidemiology Extraction Table: Reproductive/Developmental					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
birth defects (neural tube defects, limbs deficiencies, oral cleft defects, heart defects) Study Design: Case-Control Health Effect: Reproductive/Developmental	adults female 305,090 mothers in Texas, for births occurring in 1996-2008	1,2-dichloroethane, exposure risk value calculated by Emission Weighted Proximity Model, which assigns a risk value to each subject based on residential proximity to emission sources and annual pounds of chemical emitted. No summary statistics provided on raw amount of exposure.	In women of all ages, exposure risk values greater than 0 were positively associated with neural tube defects OR=1.28 (CI 1.01, 1.62), spina bifida OR=1.64 (CI 1.24, 2.16), and septal heart defects for the 2nd quartile of exposure risk values OR=1.42 (CI 1.20, 1.69).	High	Brender et al. 2014 2799700
invasive breast cancer Study Design: Cohort (Prospective) Health Effect: Reproductive/Developmental	adults female A group of 112,378 female participants from the California Teacher Study cohort, California, 1995-2011	approximate median concentration of ethylene dichloride (1,2-dichloroethane) is between 1E-4 and 1E-2 (estimated from Figure 1), exposure groups were classified into 5 Quintiles	No significant increase in the estimated hazard rate ratio for invasive breast cancer was observed with Quintile 2-5 exposure estimates for 1,2-dichloroethane, adjusted for age and race, when compared against Quintile 1. The OR (95% CI) for Quintiles 2, 3, 4, and 5 are as follows, respectively: 1.04 (0.95-1.12), 0.94 (0.86-1.02), 1.04 (0.96-1.13), and 1.05 (0.97-1.14), p(trend) 0.25. There were no significant changes when the models were further adjusted using multiple comparisons.	High	Garcia et al. 2015 3014082

Epidemiology Extraction Table: Skin and Connective Tissue					
Measured Effect/ Endpoints	Study Population	Exposure	Results	Overall Quality Determination	Citation and HERO ID
Death due to soft-tissue sarcoma. Study Design: Case-Control (Nested) Health Effect: Skin and Connective Tissue	occupational male & female 37,000 workers at a chem- ical production facility who worked at least 1 year between January 1940- December 1979.	ethylene dichloride, Occupa- tional exposure (not quantified).	1 case of soft-tissue sarcoma (6 matched controls); OR = 1.61 (95% CI: 0.16-16.35); no significant association was reported.	Medium	Sobel et al. 1987 1357737