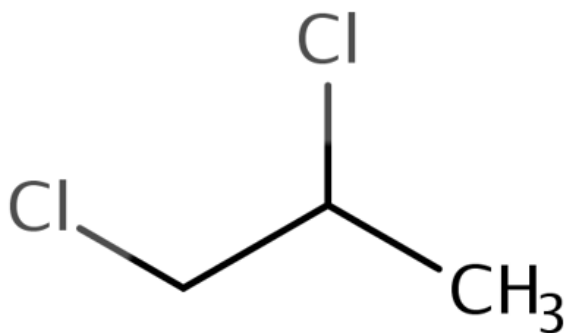

**Draft Data Quality Evaluation Information for
Environmental Hazard for
1,2-Dichloropropane**

Systematic Review Support Document for the Draft Risk Evaluation

CASRN: 78-87-5



May 2026

This supplemental file contains information regarding the data quality evaluation results relevant to the characterization of environmental hazard for the *Draft Risk Evaluation for 1,2-Dichloropropane*. Due to data gaps identified for 1,2-dichloropropane, analog data from 1,1,2-trichloroethane were included for read-across in the *Draft Risk Evaluation for 1,2-Dichloropropane*. EPA conducted data quality evaluation 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. EPA used the TSCA systematic review process described in the *Draft Systematic Review Protocol Supporting TSCA Risk Evaluations for Chemical Substances* (referred to hereafter as the '2021 Draft Systematic Review Protocol'). Any updated steps in the systematic review process since the publication of the 2021 Draft Systematic Review Protocol are described in the *Draft Systematic Review Protocol for 1,2-Dichloropropane*.

Different data quality evaluation forms were used for different organism as described in the PECO statement in Appendix H.5.7 of the 2021 Draft Systematic Review Protocol. Each health outcome was evaluated independently within a given reference; therefore, each reference may have more than one overall quality determination (OQD) to more appropriately reflect the quality of each health outcome and the respective hazard endpoints as described by the study authors. Some data evaluation forms have general additional comments presented adjacent to the OQD to add further context. No OQD is determined for each reference as a whole, if it contains data from more than one evidence stream. Data quality evaluation results were organized by first presenting the data for the target compound (1,2-dichloropropane) followed by a separate section for analog data (1,1,2-trichloroethane). The table of contents lists references based on chemical, broad habitat (i.e., aquatic, terrestrial), taxa, taxonomic group, exposure duration, and health outcome (e.g., mortality) categories relevant to the endpoint being evaluated.

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HERO ID	Reference	Page
1,2-Dichloropropane		
Habitat: Aquatic (freshwater)		
Taxa: Vertebrates		
<i>Fathead minnow (Pimephales promelas)</i>		
4259619	Walbridge, C. T., Fiant, J. T., Phipps, G. L., Holcombe, G. W. (1983). Acute toxicity of ten chlorinated aliphatic hydrocarbons to the fathead minnow (Pimephales promelas). Archives of Environmental Contamination and Toxicology 12(6):661-666.	8
<i>Lepomis macrochirus</i>		
18064	Buccafusco, R. J., Ells, S. J., Leblanc, G. A. (1981). Acute toxicity of priority pollutants to bluegill (Lepomis macrochirus). Bulletin of Environmental Contamination and Toxicology 26(4):446-452.	20
18670	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.	22
<i>Pimephales promelas</i>		
18052	Benoit, D. A., Puglisi, F. A., Olson, D. L. (1982). A fathead minnow Pimephales promelas early life stage toxicity test method evaluation and exposure to four organic chemicals. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.	25
32169	Geiger, D. L., Northcott, C. E., Call, D. J., Brooke, L. T. (1985). Acute toxicities of organic chemicals to fathead minnows (Pimephales promelas): Volume II.	27
18052	Benoit, D. A., Puglisi, F. A., Olson, D. L. (1982). A fathead minnow Pimephales promelas early life stage toxicity test method evaluation and exposure to four organic chemicals. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.	31
<i>Poecilia reticulata</i>		
3684127	Könemann, H. (1981). Quantitative structure-activity relationships in fish toxicity studies. Part 1: Relationship for 50 industrial pollutants. Toxicology 19(3):209-221.	35
Taxa: Invertebrates		
<i>Chironomus riparius</i>		
11424404	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (Chironomus riparius) under static conditions.	37
<i>Daphnia magna</i>		
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.	47

1,2-Dichloropropane

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660810	Freitag, D., Ballhorn, L., Behecti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.	49
7508	Leblanc, G. A. (1980). Acute toxicity of priority pollutants to water flea (Daphnia magna). Bulletin of Environmental Contamination and Toxicology 24(5):684-691.	51
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.	53
<i>Mysidopsis bahia</i>		
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.	57
Taxa: Plants (Non-vascular)		
<i>Chlamydomonas reinhardi</i>		
2797876	Schäfer, H., Hettler, H., Fritsche, U., Pitzen, G., Röderer, G., Wenzel, A. (1994). Biotests using unicellular algae and ciliates for predicting long-term effects of toxicants. Ecotoxicology and Environmental Safety 27(1):64-81.	59
<i>Pseudokirchneriella subcapitata</i>		
3617867	Tsai, K. P., Chen, C. Y. (2007). An algal toxicity database of organic toxicants derived by a closed-system technique. Environmental Toxicology and Chemistry 26(9):1931-1939.	61
<i>Scenedesmus subspicatus</i>		
10214703	Behecti, A., Ballhorn, L., Kettrup, A. (1995). Toxicity of chlorinated alkanes on the alga Scenedesmus subspicatus in a closed test vessel. Fresenius Environmental Bulletin 4(3):148-153.	63
<i>Scenedesmus subspicata</i>		
660810	Freitag, D., Ballhorn, L., Behecti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.	65
<i>Selenastrum capricornutum</i>		
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.	67
Habitat: Aquatic (marine)		
Taxa: Vertebrates		
<i>Limanda limanda</i>		
75062	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.	69
<i>Menidia beryllina</i>		

1,2-Dichloropropane

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18670	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.	71
Taxa: Invertebrates		
	<i>Elminus modestus</i>	
75062	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.	73
	<i>Mysidopsis bahia</i>	
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.	75
3617735	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (Mysidopsis bahia). :15.	79
3617735	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (Mysidopsis bahia). :15.	81
2803625	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.	87
Taxa: Plants (Non-vascular)		
	<i>Phaeodactylum tricornutum</i>	
75062	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.	93
	<i>Skeletonema costatum</i>	
10610562	Dow Chemical, (2010). [Redacted] Reanalysis of algal growth inhibition data from 1,2-dichloropropane report "1,2-Dichloropropane: The toxicity to Skeletonema costatum".	95
	<i>Skelotonema costatum</i>	
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.	97
Habitat: Aquatic (brackish)		
Taxa: Vertebrates		
	<i>Cyprinodon variegatus</i>	
2799638	Dow Chemical, (1987). Fish toxicity studies.	99

1,2-Dichloropropane

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18110	Heitmuller, P. T., Hollister, T. A., Parrish, P. R. (1981). Acute toxicity of 54 industrial chemicals to sheepshead minnows (<i>Cyprinodon variegatus</i>). Bulletin of Environmental Contamination and Toxicology 27(5):596-604.	101
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Habitat: Terrestrial

Taxa: Vertebrates

Rattus norvegicus

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
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Taxa: Invertebrates

Allolobophora tuberculata

2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	113
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2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	115
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Eisenia fetida

2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	117
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2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	119
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2136924	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. Soil Biology and Biochemistry 22(2):175-180.	121
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Eudrilus eugeniae

2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	127
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2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	129
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Perionyx excavatus

2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	131
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2135364	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.	133
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Analog Chemical Data

1,2-Dichloropropane

Table of Contents

Habitat: Aquatic (freshwater)

Taxa: Invertebrates

Chironomus riparius

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.	135
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.	137

Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was reported with accepted nomenclature as 1,2-Dichloropropane.
	Metric 2:	Test Substance Source	Low	The test substance source was not reported.
	Metric 3:	Test Substance Purity	Low	The purity and/or grade of the test substance was not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Negative controls were reportedly used, but there was no mention of the control response.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control group was not reported.
	Metric 6:	Randomized Allocation	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	"Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers. These chambers were all-glass aquaria with a working volume of 41 L, 30 cm high by 30 cm by 60 cm, with a standpipe topped with a cylinder of stainless-steel screen to prevent loss of fish. Flows were greater than ten tank-volumes per day. Fluorescent lighting on a 16 hr photoperiod was used, and the light level was 48 lumens at the water
	Metric 8:	Consistency of Exposure Administration	High	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that. A saturator system was used to solubilize the chemicals (Phipps et al. 1982). This saturator uses an intermittent flow of water, delivered by a metering pump, through one or more closed chambers (19 L stainless steel soda carbonation tanks). The water is continuously mixed with the toxicant, the latter was added in a single charge before the test began. Methods not discussed here followed those specified by the U.S. Environmental Protection Agency (1975)."
	Metric 9:	Measurement of Test Substance Concentration	High	"Tracor MT-220 manual gas chromatograph with a 63Ni electron capture detector was used for analyzing 1,2-dichloroethane, 1,2-dichloropropane, 1,3-dichloropropane, and 1,1 ,2-trichloroethylene. The column was packed with 80/100 mesh Gas-Chrom QI coated with 4% SE-30/6% OV-210. The carrier gas for all compounds was 5% methane in argon, and the column temperatures and retention times are given in Table 2."
	Metric 10:	Exposure Duration and Frequency	High	Study authors conducted 24, 48, 72, and 96hr exposures This information was not specified in the methods section but in the results.

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	No information is provided on the number of exposure groups and spacing of exposure levels. "Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers."	
	Metric 12: Testing at or Below Solubility Limit	Low	There is no information regarding the use of a solvent, other than most of the chemicals sampled were solvents for their intended use.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Medium	No animal source was identified other than, "Laboratory-reared fathead minnows (<i>Pimephales promelas</i>), 30 to 35 days old, were used in these experiments."	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	"The rearing water was the same as the diluent water, with the temperature held at a temperature of 25 degrees C plus or minus 2 degrees. Fish in the rearing tanks were fed live brine shrimp nauplii in excess until 12 to 24 hr before testing, then not fed during the exposure period."	
	Metric 15: Number of Organisms and Replicates per Group	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	"The laboratory lake water supply (Lake Superior) was the source of the dilution water. This was heated to maintain a mean of 25 degrees with a standard deviation of 0.7~ in the test tanks. At least once during each 4-day test, pH, dissolved oxygen (DO), hardness (as CaCO3), and alkalinity (as CaCO3) were determined for control, an intermediate, and the high tanks. The pH ranged from 6.7 to 7.6. Means and ranges for DO, hardness, and alkalinity, were 8.0 mg/L (7.6-9.2), 45.1 mg/L as CaCO3 (45.0-45.5), and 41.8 mg/L as CaCO3 (35.6-43.4), respectively, for all tests. Values obtained from high exposure concentrations did not deviate significantly from those observed in the controls. Water chemistry methods were those recommended by the American Public Health Association (APHA et al. 1980) and the U.S. Environmental Protection Agency (USEPA 1974)."	
	Metric 17: Outcome Assessment Methodology	Uninformative	The recording of lethargy and anesthesia were not recorded for treatment groups and are subjective observations.	
	Metric 18: Consistency of Outcome Assessment	High	No inconsistencies were identified.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	No confounding variables were reported by the study authors.	

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile		
Health Outcome:	Behavioral		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661		
Domain	Metric	Rating	Comments
	Metric 20: Outcomes Unrelated to Exposure	Medium	No outcomes unrelated to the exposure were identified by the study authors.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	No statistics were applied to observations of lethargy and anesthesia.
	Metric 22: Reporting of Data	Low	The behavioral observations were not presented by treatment groups.
	Metric 23: Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.
Additional Comments: This form represents the observations of lethargy and anesthesia that were recorded within the results section on page 5/6 for 1,2-Dichloropropane.			

Overall Quality Determination**Uninformative**

Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	Medium	The test substance was reported with accepted nomenclature as 1,2-Dichloropropane.
	Metric 2: Test Substance Source	Low	The test substance source was not reported.
	Metric 3: Test Substance Purity	Low	The Purity and/or grade of test substance were not reported.
Domain 2: Test Design			
	Metric 4: Negative Controls	Low	Negative controls were reportedly used but there was no mention of the control response.
	Metric 5: Negative Control Response	Low	The biological response of the negative control group was not reported.
	Metric 6: Randomized Allocation	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks."
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	Low	"Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers. These chambers were all-glass aquaria with a working volume of 41 L, 30 cm high by 30 cm by 60 cm, with a standpipe topped with a cylinder of stainless-steel screen to prevent loss of fish. Flows were greater than ten tank-volumes per day. Fluorescent lighting on a 16 hr photoperiod was used, and the light level was 48 lumens at the water surface."
	Metric 8: Consistency of Exposure Administration	High	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that. A saturator system was used to solubilize the chemicals (Phipps et al. 1982). This saturator uses an intermittent flow of water, delivered by a metering pump, through one or more closed chambers (19 L stainless steel soda carbonation tanks). The water is continuously mixed with the toxicant, the latter was added in a single charge before the test began. Methods not discussed here followed those specified by the U.S. Environmental Protection Agency (1975)."
	Metric 9: Measurement of Test Substance Concentration	High	"Tracor MT-220 manual gas chromatograph with a 63Ni electron capture detector was used for analyzing 1,2-dichloroethane, 1,2-dichloropropane, 1,3-dichloropropane, and 1,1,2-trichloroethylene. The column was packed with 80/100 mesh Gas-Chrom QI coated with 4% SE-30/6% OV-210. The carrier gas for all compounds was 5% methane in argon, and the column temperatures and retention times are given in Table 2."
	Metric 10: Exposure Duration and Frequency	High	Study authors conducted 24, 48, 72, and 96 hr exposures. This information was not specified in the methods section but in the results.

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	No information is provided on the number of exposure groups and spacing of exposure levels. "Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers."	
	Metric 12: Testing at or Below Solubility Limit	Low	There is no information regarding the use of a solvent, other than most of the chemicals sampled were solvents for their intended use.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Medium	No animal source was identified other than, "Laboratory-reared fathead minnows (<i>Pimephales promelas</i>), 30 to 35 days old, were used in these experiments."	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	"The rearing water was the same as the diluent water, with the temperature held at a temperature of 25 degrees C plus or minus 2 degrees. Fish in the rearing tanks were fed live brine shrimp nauplii in excess until 12 to 24 hr before testing, then not fed during the exposure period."	
	Metric 15: Number of Organisms and Replicates per Group	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	"The laboratory lake water supply (Lake Superior) was the source of the dilution water. This was heated to maintain a mean of 25 degrees with a standard deviation of 0.7~ in the test tanks. At least once during each 4-day test, pH, dissolved oxygen (DO), hardness (as CaCO3), and alkalinity (as CaCO3) were determined for control, an intermediate, and the high tanks. The pH ranged from 6.7 to 7.6. Means and ranges for DO, hardness, and alkalinity, were 8.0 mg/L (7.6-9.2), 45.1 mg/L as CaCO3 (45.0-45.5), and 41.8 mg/L as CaCO3 (35.6-43.4), respectively, for all tests. Values obtained from high exposure concentrations did not deviate significantly from those observed in the controls. Water chemistry methods were those recommended by the American Public Health Association (APHA et al. 1980) and the U.S. Environmental Protection Agency (USEPA 1974)."	
	Metric 17: Outcome Assessment Methodology	High	The 96 hr LC50 and 95% confidence intervals were established from the study.	
	Metric 18: Consistency of Outcome Assessment	High	No inconsistencies were identified.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	No confounding variables were reported by the study authors.	
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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
	Metric 20: Outcomes Unrelated to Exposure	Medium	Study authors did not identify and outcomes unrelated to the exposure.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	"The LC50 concentrations were calculated by using the Trimmed Spearman-Kärber method for estimating median lethal concentrations (Hamilton et al. 1977). This method is not subject to the deficiencies of the more common normal or logistic methods and it is not as sensitive to anomalous responses on the conventional Spearman-Kärber technique."
	Metric 22: Reporting of Data	High	"The 24-, 48-, 72-, and 96-hr LC50 values and 95% confidence intervals of the chlorinated aliphatic compounds are given in Table 3."
	Metric 23: Explanation of Unexpected Outcomes	High	Study authors did not identify any unexpected outcomes.

Additional Comments: This form represents 1,2-Dichloropropane acute mortality studies.

Overall Quality Determination**Medium**

Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was reported with accepted nomenclature as 1,3-Dichloropropane.
	Metric 2:	Test Substance Source	Low	The test substance source was not reported.
	Metric 3:	Test Substance Purity	Low	The purity and/or grade of the test substance was not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Negative controls were reportedly used, but there was no mention of the control response.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control group was not reported.
	Metric 6:	Randomized Allocation	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	"Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers. These chambers were all-glass aquaria with a working volume of 41 L, 30 cm high by 30 cm by 60 cm, with a standpipe topped with a cylinder of stainless-steel screen to prevent loss of fish. Flows were greater than ten tank-volumes per day. Fluorescent lighting on a 16 hr photoperiod was used, and the light level was 48 lumens at the water
	Metric 8:	Consistency of Exposure Administration	High	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that. A saturator system was used to solubilize the chemicals (Phipps et al. 1982). This saturator uses an intermittent flow of water, delivered by a metering pump, through one or more closed chambers (19 L stainless steel soda carbonation tanks). The water is continuously mixed with the toxicant, the latter was added in a single charge before the test began. Methods not discussed here followed those specified by the U.S. Environmental Protection Agency (1975)."
	Metric 9:	Measurement of Test Substance Concentration	High	"Tracor MT-220 manual gas chromatograph with a 63Ni electron capture detector was used for analyzing 1,2-dichloroethane, 1,2-dichloropropane, 1,3-dichloropropane, and 1,1 ,2-trichloroethylene. The column was packed with 80/100 mesh Gas-Chrom QI coated with 4% SE-30/6% OV-210. The carrier gas for all compounds was 5% methane in argon, and the column temperatures and retention times are given in Table 2."
	Metric 10:	Exposure Duration and Frequency	High	Study authors conducted 24, 48, 72, and 96hr exposures This information was not specified in the methods section but in the results.

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	No information is provided on the number of exposure groups and spacing of exposure levels. "Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers."	
	Metric 12: Testing at or Below Solubility Limit	Low	There is no information regarding the use of a solvent, other than most of the chemicals sampled were solvents for their intended use.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Medium	No animal source was identified other than, "Laboratory-reared fathead minnows (<i>Pimephales promelas</i>), 30 to 35 days old, were used in these experiments."	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	"The rearing water was the same as the diluent water, with the temperature held at a temperature of 25 degrees C plus or minus 2 degrees. Fish in the rearing tanks were fed live brine shrimp nauplii in excess until 12 to 24 hr before testing, then not fed during the exposure period."	
	Metric 15: Number of Organisms and Replicates per Group	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	"The laboratory lake water supply (Lake Superior) was the source of the dilution water. This was heated to maintain a mean of 25 degrees with a standard deviation of 0.7~ in the test tanks. At least once during each 4-day test, pH, dissolved oxygen (DO), hardness (as CaCO3), and alkalinity (as CaCO3) were determined for control, an intermediate, and the high tanks. The pH ranged from 6.7 to 7.6. Means and ranges for DO, hardness, and alkalinity, were 8.0 mg/L (7.6-9.2), 45.1 mg/L as CaCO3 (45.0-45.5), and 41.8 mg/L as CaCO3 (35.6-43.4), respectively, for all tests. Values obtained from high exposure concentrations did not deviate significantly from those observed in the controls. Water chemistry methods were those recommended by the American Public Health Association (APHA et al. 1980) and the U.S. Environmental Protection Agency (USEPA 1974)."	
	Metric 17: Outcome Assessment Methodology	Uninformative	The recording of lethargy and anesthesia were not recorded for treatment groups and are subjective observations.	
	Metric 18: Consistency of Outcome Assessment	High	No inconsistencies were identified.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	No confounding variables were reported by the study authors.	

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile		
Health Outcome:	Behavioral		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661		
Domain	Metric	Rating	Comments
	Metric 20: Outcomes Unrelated to Exposure	Medium	No outcomes unrelated to the exposure were identified by the study authors.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	No statistics were applied to observations of lethargy and anesthesia.
	Metric 22: Reporting of Data	Low	The behavioral observations were not presented by treatment groups.
	Metric 23: Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.
Additional Comments: This form represents the observations of lethargy and anesthesia that were recorded within the results section on page 5/6 for 1,3-Dichloropropane.			

Overall Quality Determination**Uninformative**

Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	Medium	The test substance was reported with accepted nomenclature as 1,3-Dichloropropane.
	Metric 2: Test Substance Source	Low	The test substance source was not reported.
	Metric 3: Test Substance Purity	Low	The Purity and/or grade of test substance were not reported.
Domain 2: Test Design			
	Metric 4: Negative Controls	Low	Negative controls were reportedly used but there was no mention of the control response.
	Metric 5: Negative Control Response	Low	The biological response of the negative control group was not reported.
	Metric 6: Randomized Allocation	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks."
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	Low	"Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers. These chambers were all-glass aquaria with a working volume of 41 L, 30 cm high by 30 cm by 60 cm, with a standpipe topped with a cylinder of stainless-steel screen to prevent loss of fish. Flows were greater than ten tank-volumes per day. Fluorescent lighting on a 16 hr photoperiod was used, and the light level was 48 lumens at the water surface."
	Metric 8: Consistency of Exposure Administration	High	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that. A saturator system was used to solubilize the chemicals (Phipps et al. 1982). This saturator uses an intermittent flow of water, delivered by a metering pump, through one or more closed chambers (19 L stainless steel soda carbonation tanks). The water is continuously mixed with the toxicant, the latter was added in a single charge before the test began. Methods not discussed here followed those specified by the U.S. Environmental Protection Agency (1975)."
	Metric 9: Measurement of Test Substance Concentration	High	"Tracor MT-220 manual gas chromatograph with a 63Ni electron capture detector was used for analyzing 1,2-dichloroethane, 1,2-dichloropropane, 1,3-dichloropropane, and 1,1,2-trichloroethylene. The column was packed with 80/100 mesh Gas-Chrom QI coated with 4% SE-30/6% OV-210. The carrier gas for all compounds was 5% methane in argon, and the column temperatures and retention times are given in Table 2."
	Metric 10: Exposure Duration and Frequency	High	Study authors conducted 24, 48, 72, and 96 hr exposures. This information was not specified in the methods section but in the results.

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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	No information is provided on the number of exposure groups and spacing of exposure levels. "Two 2-L/cycle proportional diluters with dilution factors of 0.6 (Mount and Brungs 1967) were used to deliver five toxicant concentrations and a control, in duplicate, to randomly arranged exposure chambers."	
	Metric 12: Testing at or Below Solubility Limit	Low	There is no information regarding the use of a solvent, other than most of the chemicals sampled were solvents for their intended use.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Medium	No animal source was identified other than, "Laboratory-reared fathead minnows (<i>Pimephales promelas</i>), 30 to 35 days old, were used in these experiments."	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	"The rearing water was the same as the diluent water, with the temperature held at a temperature of 25 degrees C plus or minus 2 degrees. Fish in the rearing tanks were fed live brine shrimp nauplii in excess until 12 to 24 hr before testing, then not fed during the exposure period."	
	Metric 15: Number of Organisms and Replicates per Group	Medium	"At the beginning of a flow-through test, 50 fish were randomly assigned to each of the 12 exposure tanks. Dead fish were counted and removed at least twice during the first day, and twice daily after that."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	"The laboratory lake water supply (Lake Superior) was the source of the dilution water. This was heated to maintain a mean of 25 degrees with a standard deviation of 0.7~ in the test tanks. At least once during each 4-day test, pH, dissolved oxygen (DO), hardness (as CaCO3), and alkalinity (as CaCO3) were determined for control, an intermediate, and the high tanks. The pH ranged from 6.7 to 7.6. Means and ranges for DO, hardness, and alkalinity, were 8.0 mg/L (7.6-9.2), 45.1 mg/L as CaCO3 (45.0-45.5), and 41.8 mg/L as CaCO3 (35.6-43.4), respectively, for all tests. Values obtained from high exposure concentrations did not deviate significantly from those observed in the controls. Water chemistry methods were those recommended by the American Public Health Association (APHA et al. 1980) and the U.S. Environmental Protection Agency (USEPA 1974)."	
	Metric 17: Outcome Assessment Methodology	High	The 96 hr LC50 and 95% confidence intervals were established from the study.	
	Metric 18: Consistency of Outcome Assessment	High	No inconsistencies were identified.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	No confounding variables were reported by the study authors.	
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Study Citation:	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>). Archives of Environmental Contamination and Toxicology 12(6):661-666.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Fathead minnow (Pimephales promelas)</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	4259619; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
	Metric 20: Outcomes Unrelated to Exposure	Medium	Study authors did not identify and outcomes unrelated to the exposure.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	"The LC50 concentrations were calculated by using the Trimmed Spearman-Kärber method for estimating median lethal concentrations (Hamilton et al. 1977). This method is not subject to the deficiencies of the more common normal or logistic methods and it is not as sensitive to anomalous responses on the conventional Spearman-Kärber technique."
	Metric 22: Reporting of Data	High	"The 24-, 48-, 72-, and 96-hr LC50 values and 95% confidence intervals of the chlorinated aliphatic compounds are given in Table 3."
	Metric 23: Explanation of Unexpected Outcomes	High	Study authors did not identify any unexpected outcomes.

Additional Comments: This form represents 1,3-Dichloropropane acute mortality studies.

Overall Quality Determination

Medium

Study Citation:	Buccafusco, R. J., Ells, S. J., Leblanc, G. A. (1981). Acute toxicity of priority pollutants to bluegill (<i>Lepomis macrochirus</i>). Bulletin of Environmental Contamination and Toxicology 26(4):446-452.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Lepomis macrochirus</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound-Other (metabolite, degradant, etc.)			
HERO ID:	18064; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	CASRN not provided.
	Metric 2:	Test Substance Source	Low	Commercial sources were not specified.
	Metric 3:	Test Substance Purity	Medium	Chemical purity reported as at least 80%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Study authors reported using both solvent and clean (water) controls, in cases where a solvent was utilized. Solvent type not specifically stated per chemical. Solvent concentration of control was equal to that of the highest test concentration.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system and methods for preparation of test media were described generically but lacking chemical-specific preparation details.
	Metric 8:	Consistency of Exposure Administration	High	Exposures for capped and uncapped conditions were described and appeared to be consistent within a condition.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not reported.
	Metric 10:	Exposure Duration and Frequency	High	Duration of acute toxicity seems appropriate with endpoints determined at 24 hr and 96 hr.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The authors do not state the number of exposure groups and spacing of exposure levels.
	Metric 12:	Testing at or Below Solubility Limit	Low	Because exposure concentrations were not reported, unable to determine whether exposure concentrations exceeded the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	The test organisms were adequately described but the exact source was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	Fish were added to vessels which required capping 30 min prior to addition of test chemical. For uncapped jars, fish were added 30 min after addition of test chemical.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	10 fish were added to a jar per test concentration. No replicate jars reported.
Domain 5: Outcome Assessment				

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Study Citation:	Buccafusco, R. J., Ells, S. J., Leblanc, G. A. (1981). Acute toxicity of priority pollutants to bluegill (<i>Lepomis macrochirus</i>). Bulletin of Environmental Contamination and Toxicology 26(4):446-452.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Lepomis macrochirus</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	18064; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735

Domain	Metric	Rating	Comments
	Metric 16: Adequacy of Test Conditions	Medium	Water quality metrics reported before and during exposure. Unclear on biomass loading prior to being placed in test jars.
	Metric 17: Outcome Assessment Methodology	Medium	Mortality was the endpoint (observations taken at 0 hr and every 24 hr during the test) but no description of how mortality was qualified (example, moribund).
	Metric 18: Consistency of Outcome Assessment	Medium	Mortality determined at 24 hr and 96 hr; unclear if these were separate test vessels.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Medium	Solvent concentration differed from high test concentration (and solvent control) when compared to lower test concentrations per information in the methods.
	Metric 20: Outcomes Unrelated to Exposure	Medium	No information in the study to suggest differences in attrition or health outcomes.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical analysis was performed using either Harris' method or, for chemicals not meeting Harris's method requirements, a log probit method.
	Metric 22: Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group. LC50 values are reported in Table 1.
	Metric 23: Explanation of Unexpected Outcomes	Medium	Within-study variability was not reported for individual chemicals.

Additional Comments: This form is for the 24 hr and 96 hr LC50 values and also for any PECO-relevant isomers that were included in the study.

Overall Quality Determination**Low**

Study Citation:	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Lepomis macrochirus</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18670			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Test substance identified by name only.	
	Metric 2: Test Substance Source	Low	Test substance source was not reported, and the test substance was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Medium	All chemicals were reported as either research or chemically pure grades, though no other specifics were given.	
Domain 2: Test Design				
	Metric 4: Negative Controls	Low	It was not clearly reported that a negative control was used. "The estimated death rate of control fish during the experiment was about 1.3 percent and 3.0 percent for fresh and salt water fish respectively." This implies that a negative control was used.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not clearly reported. "The estimated death rate of control fish during the experiment was about 1.3 percent and 3.0 percent for fresh and salt water fish respectively." However, unclear whether there was a true control or the stock tank was used as control.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Uninformative	Test media preparations methods were not provided in detail. No measures were taken to minimize loss of test substance during the test. The study reported some chemicals were insoluble and LC50s reflected the total chemical added, not simply the soluble fraction. Some chemicals were volatile and there was loss via vaporization. Exposure concentrations were not measured.	
	Metric 8: Consistency of Exposure Administration	Low	Mortalities were measured daily, however, some tests required air to be administered partway through the test due to low DO. This could impact chemical loss. The study reported some chemicals were insoluble and LC50s reflected the total chemical added, not simply the soluble fraction. Some chemicals were volatile and there was loss via vaporization.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Medium	Table 2 (page 10/16) shows that 4 exposure groups were used for the acute toxicity test. Spacing of exposure levels appeared adequate.	
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Study Citation:	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Lepomis macrochirus</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18670			
Domain	Metric	Rating	Comments	
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit of 2800 mg/l provided in the scope document.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Test species were obtained from commercial hatcheries. Age was not specified. Some needed to be treated for disease before testing was initiated.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	The test organisms were acclimatized to test conditions but unclear whether the pretreatment conditions were the same for control and exposed organisms. Some groups of fish were subjected to disease prevention treatments.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of test organisms and/or replicates was not reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	D.O. was measured daily and aeration was turned on if the D.O. became too low. pH was measured at the end of the test but data were not provided. temperature was held constant at 23oC.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest (LC50s)
	Metric 18:	Consistency of Outcome Assessment	Medium	Outcomes were assessed daily for 96hr and dead fish were removed immediately. Few other details were provided.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Some tests were aerated for a time after 24hr depending on D.O. levels, which may have affected the chemical concentration in the test water.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	LC50s were calculated by plotting survival percentages on semi-logarithmic paper and drawing a straight line "fit" through or near significant points.
	Metric 22:	Reporting of Data	Medium	Data outcomes were reported for each treatment group, but no data was reported regarding the control group.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.

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Study Citation:	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Lepomis macrochirus</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	18670

Domain	Metric	Rating	Comments
Additional Comments:	Test media preparation methods and control response were not clearly provided. The study reported some chemicals were insoluble and LC50s reflected the total chemical added, not simply the soluble fraction. Some chemicals were volatile and there was loss via vaporization. Exposure concentrations were not measured and LC 50 values were presented without any measures of variability.		

Overall Quality Determination**Uninformative**

Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance	Metric 1:	Test Substance Identity	High	The chemicals identified by name and condensed structural formula. The test substances covered in this form are 1,2-dichloropropane and its isomer, 1,3-dichloropropane; these were tested independently.
	Metric 2:	Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	Purity was reported as 98-99% for 1,2-dichloropropane and 1,3-dichloropropane
Domain 2: Test Design	Metric 4:	Negative Controls	Uninformative	The LC 50 data provided is not original data. No study details were provided in the paper for the derivation of LC 50 values.
	Metric 5:	Negative Control Response	Uninformative	No study details were provided.
	Metric 6:	Randomized Allocation	Uninformative	No study details were provided.
Domain 3: Exposure Characterization	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The type of experimental system and/or test media preparation methods were not reported.
	Metric 8:	Consistency of Exposure Administration	Uninformative	No study details were provided.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	No study details were provided.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	No information is provided on the number of exposure groups and spacing of exposure levels.
	Metric 12:	Testing at or Below Solubility Limit	Uninformative	No information was provided.
Domain 4: Test Organism	Metric 13:	Test Organism Characteristics	Low	The LC 50 test was conducted with 30 day old fish.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The numbers of test organisms and replicates were not reported.
Domain 5: Outcome Assessment				

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Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	Low	Organism environmental conditions were not reported.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment were not reported.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Statistical analysis was performed but not described adequately.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were presented for each treatment group, but the control groups were not reported. Only LC 50 values were reported.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.
Additional Comments:	This evaluation form is for the mortality outcome, specifically for 96-hr LC 50 reported in the study. However, this is not original data, and the acute toxicity test was conducted prior to the test in the study by different authors.This form is relevant to both 1,2-dichloropropane and its isomer, 1,3-dichloropropane.			

Overall Quality Determination**Uninformative**

Study Citation:	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.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	32169			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance 1, 3-dichloropropane was identified by name and CAS#.
	Metric 2:	Test Substance Source	Low	The test substance was purchased from Aldrich Chemical Company (page 67/346), but the identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The chemical purity reported as 99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.
	Metric 5:	Negative Control Response	High	The biological response of the negative control group was reported and reasonable for assessed outcomes.
	Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail and appropriately accounted for the physical-chemical properties of the test substance.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported, and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured and were similar to nominal concentrations, but analytical technologies used were less sensitive.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	Liquid-liquid equilibrium was used to prepare the stock solution. Exposure concentrations were at or below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions, and all pretreatment conditions were the same for control and exposed organisms.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of test organisms (50 per test vessel) was reported in the datasheet (page 68) but was tested only in duplicate.
Domain 5: Outcome Assessment				

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Study Citation:	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.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	32169			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health, and biomass loading was appropriate.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	LC50 values with corresponding confidence intervals were determined using the trimmed Spearman- Karber method.
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group and were adequate to determine values for the endpoint.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	This evaluation form is for 1,3-dichloropropane, an isomer of 1,2-dichloropropane. The LC 50 value for 1,3-dichloropropane was 131 mg/l (CI: 125-137 mg/l), and all associated data was provided on pages 67-68/346.			

Overall Quality Determination**High**

Study Citation:	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.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	32169			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The chemical was identified by name and CAS#.
	Metric 2:	Test Substance Source	Low	The test substance was purchased from Aldrich Chemical Company (page 65/346), but the identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The chemical purity was reported as 99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.
	Metric 5:	Negative Control Response	High	The biological response of the negative control group was reported and reasonable for assessed outcomes.
	Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail and appropriately accounted for the physical-chemical properties of the test substance.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported, and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured and were similar to nominal concentrations, but analytical technologies used were less sensitive.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	Liquid-liquid equilibrium was used to prepare the stock solution. Exposure concentrations were at or below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions, and all pretreatment conditions were the same for control and exposed organisms.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of test organisms (50 per test vessel) was reported in the datasheet (page 66) but tested only in duplicate.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health, and biomass loading was appropriate.

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Study Citation:	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.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	32169			
Domain	Metric	Rating	Comments	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest.	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	LC50 values with corresponding confidence intervals were determined using the trimmed Spearman- Karber method.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group and were adequate to determine values for the endpoint.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	The LC 50 value for 1,2-dichloropropane was 126 mg/l (CI: 119-135 mg/l), and all associated data was provided on pages 65-66/346.			
Overall Quality Determination		High		

Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	The chemicals were identified by name and condensed structural formula. The test substances covered in this form are 1,2-dichloropropane and its isomer, 1,3-dichloropropane; these were tested independently.	
Metric 2:	Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	The purity was reported as 98-99% and is relevant for 1,2-dichloropropane and its isomer, 1,3-dichloropropane.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	High	The biological response of the negative control group was adequate.	
Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail,	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported, and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were adequate to address the purpose of the study.	
Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
Metric 14:	Acclimatization and Pretreatment Conditions	High	All pretreatment conditions were the same for control and exposed organisms.	
Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				

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Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo
Health Outcome:	Development/Growth
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of health, and biomass loading was appropriate.
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	Statistical analysis was performed but not described adequately.
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: Growth and normal larvae at hatch were assessed in this evaluation form and is relevant to 1,2- dichloropropane and its isomer, 1,3-dichloropropane.

Overall Quality Determination**High**

Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The chemicals were identified by name and condensed structural formula. The test substances covered in this form are 1,2-dichloropropane and its isomer, 1,3-dichloropropane; these were tested independently.
	Metric 2:	Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The purity was reported as 98-99% for 1,2-dichloropropane and 1,3-dichloropropane.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.
	Metric 5:	Negative Control Response	High	The biological response of the negative control group was adequate.
	Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported, and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were adequate to address the purpose of the study.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	All pretreatment conditions were the same for control and exposed organisms.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of health, and biomass loading was appropriate.
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Study Citation:	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. Environmental Pollution Series A: Ecological and Biological 28(3):189-197.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vertebrate; Fish; <i>Pimephales promelas</i> ; Embryo
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	18052; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest.
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	Statistical analysis was performed but not described adequately.
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: Mortality and hatch were assessed in this evaluation form and is relevant to 1,2- dichloropropane and its isomer, 1,3-dichloropropane.

Overall Quality Determination

High

Study Citation:	Könemann, H. (1981). Quantitative structure-activity relationships in fish toxicity studies. Part 1: Relationship for 50 industrial pollutants. Toxicology 19(3):209-221.			
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Poecilia reticulata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	3684127			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Test substance was identified by name only.
	Metric 2:	Test Substance Source	Low	Test substance source was not reported nor was the test substance analytically verified.
	Metric 3:	Test Substance Purity	Low	Purity and grade were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Uninformative	A concurrent negative control group was not included or reported.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Alabaster and Abram were cited for water preparation. Glass covers were placed over test vessels with daily renewals. Details were fairly limited otherwise.
	Metric 8:	Consistency of Exposure Administration	Medium	7 day exposures with a geometrical progression ratio of 3.2. There was no mention of irregularities in the exposure administration.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type–7 day exposure
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	Concentrations were reported to have a geometrical progression with a ration of 3.2. The number of concentrations was not reported nor was the concentration of each treatment.
	Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit, but a solvent was used to aid in solubility.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Test organisms were adequately described, but there was no mention of the source of the organisms.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized or whether pretreatment conditions were the same for control and exposed groups
	Metric 15:	Number of Organisms and Replicates per Group	Low	Only eight guppies were tested in each concentration. There was no mention of replicates.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Food, water, temperature, and D.O. were adequately described. Loading rate was not described.

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Study Citation:	Könemann, H. (1981). Quantitative structure-activity relationships in fish toxicity studies. Part 1: Relationship for 50 industrial pollutants. Toxicology 19(3):209-221.			
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Poecilia reticulata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	3684127			
Domain	Metric	Rating	Comments	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest—LC50s were reported and used for QSAR.	
	Metric 18: Consistency of Outcome Assessment	Medium	Study duration was 7 days and fish were checked for mortalities. Fish were determined to be dead if there was no gill movement when prodded. It was unclear as to how often the fish were assessed. Was it every 24hr? Or was it just at the end of the exposure?	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	LC50 calculations were determined by using methods citing Litchfield and Wilcoxon or by log/probit-plot if the concentration effect relationships were too steep. QSAR calculations were demonstrated in the paper.	
	Metric 22: Reporting of Data	Medium	Data in the form of LC50s was reported, but there was no mention of control performance.	
	Metric 23: Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.	
Additional Comments:	A concurrent negative control was not included or reported. The number of exposure concentrations and spacing of levels were not provided. Only LC 50 values (without confidence limits) were reported.This evaluation form is relevant to 1,2 -Dichloropropane and its isomer 1,3-Dichloropropane.			

Overall Quality Determination**Uninformative**

Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	11424404			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Radiolabeled test substance identified by name and chemical structure. Non-radiolabeled test substance identified by name and CASRN.	
Metric 2:	Test Substance Source	High	The test substance source was reported for both the radiolabeled and non-radiolabeled test substance.	
Metric 3:	Test Substance Purity	High	The purity of the radiolabeled test substance was reported to be 100% and the non-radiolabeled test substance purity was reported to be 99.6%.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	An appropriate concurrent negative control was tested.	
Metric 5:	Negative Control Response	High	The negative control biological response was adequate.	
Metric 6:	Randomized Allocation	Medium	Organisms were impartially added to intermediate vessels, and intermediate vessels were subsequently impartially added to exposure vessels.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	High	The static experimental system was described in detail. Glass test vessels were filled completely, eliminating headspace, and a closed system was created with tightly fitted plastic screw caps.	
Metric 8:	Consistency of Exposure Administration	High	Exposure administration was consistent across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Test concentrations were measured at 0-hour, 24-hour, and 48-hour intervals. Volatility of the chemical yielded test concentrations approximately 50% of nominal concentrations. The EC50 was based on mean measured concentrations.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Six concentrations were tested in addition to a control, with 2x spacing between nominal concentrations. The number and spacing were appropriate and allowed for identification of endpoint values.	
Metric 12:	Testing at or Below Solubility Limit	High	All exposure concentrations were below the solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The test organisms were described in detail and were obtained from the laboratory culture. <i>C. riparius</i> is the primary guideline species for this test.	
Metric 14:	Acclimatization and Pretreatment Conditions	High	Pretreatment conditions were adequately described and were the same for the control and exposed organisms.	
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Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	11424404			
Domain	Metric	Rating	Comments	
	Metric 15: Number of Organisms and Replicates per Group	Medium	Replication and the number of test organisms were consistent with guidelines.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Test conditions were described in detail and were adequate.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest: abnormal behavior.	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	N/A	Behavioral observations are not typically statistically analyzed.	
	Metric 22: Reporting of Data	High	Behavioral observations were reported for each group and replicate.	
	Metric 23: Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.	
Additional Comments:	This evaluation is for the behavioral outcome of the definitive trial exposing <i>Chironomus riparius</i> to 1,2-dichloropropane.			

Overall Quality Determination**High**

Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	11424404		
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	High	The test substance was identified by name and CASRN.
	Metric 2: Test Substance Source	High	The test substance source was reported.
	Metric 3: Test Substance Purity	High	The test substance purity was reported to be 99.6%.
Domain 2: Test Design			
	Metric 4: Negative Controls	High	An appropriate concurrent negative control was tested.
	Metric 5: Negative Control Response	High	The negative control biological response was adequate.
	Metric 6: Randomized Allocation	Medium	Organisms were impartially added to intermediate vessels, and intermediate vessels were subsequently impartially added to exposure vessels.
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	High	The static experimental system was described in detail. Glass test vessels were filled completely, eliminating headspace, and a closed system was created with tightly fitted plastic screw caps.
	Metric 8: Consistency of Exposure Administration	High	Exposure administration was consistent across study groups.
	Metric 9: Measurement of Test Substance Concentration	Low	Test concentrations were not measured during the preliminary test.
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate.
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Medium	The number and spacing of exposure levels were wider than typical but appropriate for a preliminary dose range-finding test.
	Metric 12: Testing at or Below Solubility Limit	High	All exposure concentrations were below the solubility limit.
Domain 4: Test Organism			
	Metric 13: Test Organism Characteristics	High	The test organisms were described in detail and were obtained from the laboratory culture. <i>C. riparius</i> is the primary guideline species for this test.
	Metric 14: Acclimatization and Pretreatment Conditions	Low	Pretreatment conditions were not described for the preliminary test.
	Metric 15: Number of Organisms and Replicates per Group	Low	Replication and the number of test organisms were lower than typical for this study type but appropriate for a preliminary range-finder test.
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	High	Test conditions were described in detail and were adequate.
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest: the percent effect for combined mortality and immobilization.
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Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	11424404			
Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	Low	Details of the outcome assessment protocol were not clearly reported for the preliminary test.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was not performed, but adequate data is available to conduct independent statistical analysis.
	Metric 22:	Reporting of Data	High	Percent effect data were presented for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.
Additional Comments:	This evaluation is for the combined percent mortality and immobilization observed in the preliminary trial exposing <i>Chironomus riparius</i> to 1,2-dichloropropane.			
Overall Quality Determination			High	

Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	11424404			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified by name and CASRN.	
	Metric 2: Test Substance Source	High	The test substance source was reported.	
	Metric 3: Test Substance Purity	High	The test substance purity was reported to be 99.6%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	An appropriate concurrent negative control was tested.	
	Metric 5: Negative Control Response	High	The negative control biological response was adequate.	
	Metric 6: Randomized Allocation	Medium	Organisms were impartially added to intermediate vessels, and intermediate vessels were subsequently impartially added to exposure vessels.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The static experimental system was described in detail. Glass test vessels were filled completely, eliminating headspace, and a closed system was created with tightly fitted plastic screw caps.	
	Metric 8: Consistency of Exposure Administration	High	Exposure administration was consistent across study groups.	
	Metric 9: Measurement of Test Substance Concentration	Low	Test concentrations were not measured during the preliminary test.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The number and spacing of exposure levels were wider than typical but appropriate for a preliminary dose range-finding test.	
	Metric 12: Testing at or Below Solubility Limit	High	All exposure concentrations were below the solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were described in detail and were obtained from the laboratory culture. <i>C. riparius</i> is the primary guideline species for this test.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	Pretreatment conditions were not described for the preliminary test.	
	Metric 15: Number of Organisms and Replicates per Group	Low	Replication and the number of test organisms were lower than typical for this study type but appropriate for a preliminary range-finder test.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Test conditions were described in detail and were adequate.	
	Metric 17: Outcome Assessment Methodology	Medium	The only reporting of behavioral effects was a footnote stating that all surviving midges were observed to be lethargic. Onset of lethargy and whether lethargy was observed prior to mortality or immobilization for non-surviving midges was not reported.	

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Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	11424404			
Domain	Metric	Rating	Comments	
	Metric 18:	Consistency of Outcome Assessment	Low	Details of the outcome assessment protocol were not clearly reported for the preliminary test.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	N/A	Behavioral effects are not typically statistically evaluated.
	Metric 22:	Reporting of Data	Low	Behavioral effects were only described generally for all surviving midges in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.
Additional Comments:	This evaluation is for the combined percent mortality and immobilization observed in the preliminary trial exposing <i>Chironomus riparius</i> to 1,2-dichloropropane.			

Overall Quality Determination**High**

Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	11424404		
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	High	Radiolabeled test substance identified by name and chemical structure. Non-radiolabeled test substance identified by name and CASRN.
	Metric 2: Test Substance Source	High	The test substance source was reported for both the radiolabeled and non-radiolabeled test substance.
	Metric 3: Test Substance Purity	High	The purity of the radiolabeled test substance was reported to be 100% and the non-radiolabeled test substance purity was reported to be 99.6%.
Domain 2: Test Design			
	Metric 4: Negative Controls	High	An appropriate concurrent negative control was tested.
	Metric 5: Negative Control Response	High	The negative control biological response was adequate.
	Metric 6: Randomized Allocation	Medium	Organisms were impartially added to intermediate vessels, and intermediate vessels were subsequently impartially added to exposure vessels.
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	High	The static experimental system was described in detail. Glass test vessels were filled completely, eliminating headspace, and a closed system was created with tightly fitted plastic screw caps.
	Metric 8: Consistency of Exposure Administration	High	Exposure administration was consistent across study groups.
	Metric 9: Measurement of Test Substance Concentration	High	Test concentrations were measured at 0-hour, 24-hour, and 48-hour intervals. Volatility of the chemical yielded test concentrations approximately 50% of nominal concentrations. The EC50 was based on mean measured concentrations.
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate.
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	Six concentrations were tested in addition to a control, with 2x spacing between nominal concentrations. The number and spacing were appropriate and allowed for identification of endpoint values.
	Metric 12: Testing at or Below Solubility Limit	High	All exposure concentrations were below the solubility limit.
Domain 4: Test Organism			
	Metric 13: Test Organism Characteristics	High	The test organisms were described in detail and were obtained from the laboratory culture. <i>C. riparius</i> is the primary guideline species for this test.
	Metric 14: Acclimatization and Pretreatment Conditions	High	Pretreatment conditions were adequately described and were the same for the control and exposed organisms.
	Metric 15: Number of Organisms and Replicates per Group	Medium	Replication and the number of test organisms were consistent with guidelines.
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Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	11424404		
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	High	Test conditions were described in detail and were adequate.
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest: the EC50 for combined mortality and immobilization.
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical analysis was conducted but described in little detail. However, sufficient data were provided that independent statistical analysis could be conducted if needed.
	Metric 22: Reporting of Data	High	Mortality data were reported for each group and replicate and were adequate to determine the EC50 in conjunction with immobilization data.
	Metric 23: Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.
Additional Comments:	This evaluation is for the mortality outcome of the definitive trial exposing <i>Chironomus riparius</i> to 1,2-dichloropropane. Combined mortality and immobilization were used to determine the EC50.		
Overall Quality Determination		High	

Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Immobilization		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	11424404		
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
Metric 1:	Test Substance Identity	High	Radiolabeled test substance identified by name and chemical structure. Non-radiolabeled test substance identified by name and CASRN.
Metric 2:	Test Substance Source	High	The test substance source was reported for both the radiolabeled and non-radiolabeled test substance.
Metric 3:	Test Substance Purity	High	The purity of the radiolabeled test substance was reported to be 100% and the non-radiolabeled test substance purity was reported to be 99.6%.
Domain 2: Test Design			
Metric 4:	Negative Controls	High	An appropriate concurrent negative control was tested.
Metric 5:	Negative Control Response	High	The negative control biological response was adequate.
Metric 6:	Randomized Allocation	Medium	Organisms were impartially added to intermediate vessels, and intermediate vessels were subsequently impartially added to exposure vessels.
Domain 3: Exposure Characterization			
Metric 7:	Experimental System/Test Media Preparation	High	The static experimental system was described in detail. Glass test vessels were filled completely, eliminating headspace, and a closed system was created with tightly fitted plastic screw caps.
Metric 8:	Consistency of Exposure Administration	High	Exposure administration was consistent across study groups.
Metric 9:	Measurement of Test Substance Concentration	High	Test concentrations were measured at 0-hour, 24-hour, and 48-hour intervals. Volatility of the chemical yielded test concentrations approximately 50% of nominal concentrations. The EC50 was based on mean measured concentrations.
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate.
Metric 11:	Number of Exposure Groups/Spacing of Exposure Levels	High	Six concentrations were tested in addition to a control, with 2x spacing between nominal concentrations. The number and spacing were appropriate and allowed for identification of endpoint values.
Metric 12:	Testing at or Below Solubility Limit	High	All exposure concentrations were below the solubility limit.
Domain 4: Test Organism			
Metric 13:	Test Organism Characteristics	High	The test organisms were described in detail and were obtained from the laboratory culture. <i>C. riparius</i> is the primary guideline species for this test.
Metric 14:	Acclimatization and Pretreatment Conditions	High	Pretreatment conditions were adequately described and were the same for the control and exposed organisms.
Metric 15:	Number of Organisms and Replicates per Group	Medium	Replication and the number of test organisms were consistent with guidelines.
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Study Citation:	Smithers, (2024). [14C]1,2-Dichloropropane – Acute toxicity to midges (<i>Chironomus riparius</i>) under static conditions.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Immobilization		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	11424404		
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	High	Test conditions were described in detail and were adequate.
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest: the EC50 for combined mortality and immobilization.
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical analysis was conducted but described in little detail. However, sufficient data were provided that independent statistical analysis could be conducted if needed.
	Metric 22: Reporting of Data	High	Immobilization data were reported for each group and replicate and were adequate to determine the EC50 in conjunction with mortality data.
	Metric 23: Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.
Additional Comments:	This evaluation is for the EC50 outcome for the definitive trial exposing <i>Chironomus riparius</i> to 1,2-dichloropropane. Combined immobilization and mortality data were used to determine the EC50.		

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance was reported and it was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The study provided only limited details on the measures taken to appropriately prepare test concentrations.	
	Metric 8: Consistency of Exposure Administration	Medium	Few details were provided for the preliminary test.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	5468652

Domain	Metric	Rating	Comments
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical methods (including any calculations or data transformations) were clearly described.
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: This evaluation is for the preliminary test.

Overall Quality Determination

High

Study Citation:	Freitag, D., Ballhorn, L., Behecti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile			
Health Outcome:	Immobilization			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	660810			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical was identified by name only
	Metric 2:	Test Substance Source	Low	The test substance source was reported nor was it analytically verified.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Reporting of EC50 implies the use of a control, and OECD guidelines were cited, which would indicate use of a control. Paper mentioned controls had to have less than %10 immobilization for a valid test.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Only limited details were provided about test substance preparation and the experimental system.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were administered in duplicates in increasing concentrations for 24hr in the dark after which, the number immobilized were determined.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured using gas chromatography
	Metric 10:	Exposure Duration and Frequency	Medium	Daphnid EC50s were measured for 24hrs not 48hrs
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	OECD methodology is cited for test protocol, little information was provided in the paper regarding test exposure groups and spacing of exposure levels
	Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source of test organisms was not provided.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Groups of 10 daphnia were used in each concentration.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate.

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Study Citation:	Freitag, D., Ballhorn, L., Behechti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile
Health Outcome:	Immobilization
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	660810

Domain	Metric	Rating	Comments
	Metric 17: Outcome Assessment Methodology	Medium	EC50s were reported, but for 24hr rather than 48hr.
	Metric 18: Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol were limited, though OECD guidelines were cited for the the protocol.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	Statistical analysis was performed but all that was reported was the use of probability paper to determine EC50s.
	Metric 22: Reporting of Data	Low	EC50s were the only data reported. Control responses were not reported.
	Metric 23: Explanation of Unexpected Outcomes	Low	They study did not report any measures of variability, no confidence intervals.

Additional Comments: OECD guidelines were cited for study protocol, but little extra information was provided in this paper, thus the numerous low ratings on many of the metrics.

Overall Quality Determination**Low**

Study Citation:	Leblanc, G. A. (1980). Acute toxicity of priority pollutants to water flea (<i>Daphnia magna</i>). Bulletin of Environmental Contamination and Toxicology 24(5):684-691.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	7508; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	The chemical was identified by name only.	
	Metric 2: Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Purity and/or grade of test substance were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	Mortality among water flea control populations never exceeded 10% in any test.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The study provided only limited details on the measures taken to appropriately prepare test concentrations. Methods were generalized for multiple chemicals.	
	Metric 8: Consistency of Exposure Administration	Medium	Reporting omissions could have a substantial impact on results.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Low	Range or spacing of test concentrations was not reported.	
	Metric 12: Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Medium	The original source was not reported.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.	
	Metric 15: Number of Organisms and Replicates per Group	Low	The number of test organisms and/or replicates was not reported.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Environmental conditions of the test system were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed the intended outcome of interest.	

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Study Citation:	Leblanc, G. A. (1980). Acute toxicity of priority pollutants to water flea (<i>Daphnia magna</i>). Bulletin of Environmental Contamination and Toxicology 24(5):684-691.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	7508; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735

Domain	Metric	Rating	Comments
	Metric 18: Consistency of Outcome Assessment	High	Details regarding the execution of the study protocol for outcome assessment (observation of heartbeat) were limited.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	Low	Not including control mortality in final calculation was reason to downgrade this.
	Metric 22: Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: None

Overall Quality Determination**Medium**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance was reported and it was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The number of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods (including any calculations or data transformations) were clearly described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	None			

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance was reported and it was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The number of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.		
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Daphnia magna</i> ; Juvenile		
Health Outcome:	Reproductive/Teratogenic		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	5468652		
Domain	Metric	Rating	Comments
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical methods (including any calculations or data transformations) were clearly described.
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments: None			
Overall Quality Determination		High	

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; 4-5 day; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance was reported and it was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	Uninformative	The biological responses (survival) of the negative control group were inadequate. Mortality was 40%.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The study provided only limited details on the measures taken to appropriately prepare the test concentration.	
	Metric 8: Consistency of Exposure Administration	Medium	Few details were provided for the preliminary test.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.	
	Metric 15: Number of Organisms and Replicates per Group	Low	Replicates were not used in this preliminary test.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Few details were provided regarding organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; 4-5 day; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain		Metric	Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
	Metric 20:	Outcomes Unrelated to Exposure	Low	There was high control mortality on the last day.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods (including any calculations or data transformations) were clearly described.
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	Low	There was no explanation for the unexpected outcome of high control mortality.QC: Vapor cross contamination occurred between treatment and control groups from common effluent drain. This condition was corrected in the definitive tests.

Additional Comments: This evaluation is for the preliminary test.

Overall Quality Determination**Uninformative**

Study Citation:	Schäfer, H., Hettler, H., Fritsche, U., Pitzen, 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.			
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Chlamydomonas reinhardtii</i> ; strain 11-3Qa; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2797876			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The chemical was identified by name only.
	Metric 2:	Test Substance Source	Low	Shell Research Limited was described as the source. It did not appear that the chemicals were analytically verified before use in the tests.
	Metric 3:	Test Substance Purity	Low	Purity and grade of the test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	A negative control group was mentioned in the footnote on page 66. "NOEC, highest concentration tested that had no significant effect relative to the control."
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	1,2 dichloropropane was only tested in the flow through system due to its volatile nature. Stock solution preparation was described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported, and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Chemical analysis was performed at the end of the equilibration period, as well as every 3-4 days during the test.
	Metric 10:	Exposure Duration and Frequency	High	The 10-day exposure appeared to be suitable for the study type.
	Metric 11:	Number of Exposure Groups/Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	A solvent was used to aid in solubility. The solvent concentration never exceeded 0.1g/L.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The initial algae concentration was 1000 cells/mL per test container.
Domain 5: Outcome Assessment				
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Study Citation:	Schäfer, H., Hettler, H., Fritsche, U., Pitzen, 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.			
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Chlamydomonas reinhardi</i> ; strain 11-3Qa; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2797876			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	High	Organism housing appeared adequate as the preculture was in the exponential growth phase when inoculum was prepared. This indicates a healthy culture.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest. The NOECs and EC50s were calculated at 4, 7, and 10 days.
	Metric 18:	Consistency of Outcome Assessment	High	Population density was determined using an electronic particle counter and EC values were determined using OECD guidelines.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Statistical analysis was performed but not described adequately. OECD Guideline 201 was cited for EC50 values where performed, but no other information was provided.
	Metric 22:	Reporting of Data	Medium	Control group data was not included in the publication.
	Metric 23:	Explanation of Unexpected Outcomes	Low	No measures of variability were reported.
Additional Comments:	A concurrent negative control group was not included or reported. The 1,2 dichloropropane was only tested with <i>Chlamydomonas reinhardi</i> in the flow through tests due to its volatile nature. The flow through test appeared to only measure population growth and not photosynthesis like the static tests did.			

Overall Quality Determination**Medium**

Study Citation:	Tsai, K. P., Chen, C. Y. (2007). An algal toxicity database of organic toxicants derived by a closed-system technique. Environmental Toxicology and Chemistry 26(9):1931-1939.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Cell Culture Media; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Pseudokirchneriella subcapitata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound-Other (metabolite, degradant, etc.)			
HERO ID:	3617867			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	The test substance was identified by name only.	
	Metric 2: Test Substance Source	High	Chemical was analyzed using HPLC prior to conducting experiments.	
	Metric 3: Test Substance Purity	High	The purity was stated as reagent grade.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors report the use of a negative control.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control was not reported.	
	Metric 6: Randomized Allocation	Low	It was not reported how the algae was allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	Experimental design described adequately.	
	Metric 8: Consistency of Exposure Administration	Medium	All exposures were for 48h in closed systems to prevent volatilization. Test bottles contained no headspace and were shaken during the duration of exposure.	
	Metric 9: Measurement of Test Substance Concentration	Medium	Stock solutions and test concentrations were reported to be measured using HPLC.	
	Metric 10: Exposure Duration and Frequency	High	The exposure duration was reported to be 48h, which was adequate for the outcome of interest.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	The number of exposure levels and the spacing of the levels were not reported. Test concentrations were not reported.	
	Metric 12: Testing at or Below Solubility Limit	Low	Test concentrations were not reported, so it was uncertain if the test concentrations were below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The algae was reported to be from the University of Texas-Austin in Austin, TX, USA.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	It was not reported if the algae was acclimated.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The staring algae concentrations were reported to be 15,000cells/mL. Each concentrations was repeated in triplicate.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Algae was tested at 24C on an orbital shaker in a closed system with 65uE/m^2/s. pH and starting cell density stated.	

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Study Citation:	Tsai, K. P., Chen, C. Y. (2007). An algal toxicity database of organic toxicants derived by a closed-system technique. Environmental Toxicology and Chemistry 26(9):1931-1939.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Cell Culture Media; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Pseudokirchneriella subcapitata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound-Other (metabolite, degradant, etc.)			
HERO ID:	3617867			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest–algae density.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups–algae density was determined using a particle counter and then calculate inhibition.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	Data on attrition and/or outcomes unrelated to controlled variables for each study group were not reported because only substantial differences among groups were noted (as indicated by study authors), and it is unlikely there were any substantial impacts on results.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	EC50 values were calculated using probit analysis.
	Metric 22:	Reporting of Data	Medium	EC50 values were reported in the Appendix.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.
Additional Comments:	This evaluation was on the effect of 1,2 dichloropropane and 1,3-dichloropropane on density of P. subcapitata. Development/growth was selected as the outcome of interest. The study received and unacceptable ranking due to the lack of information regarding the test concentrations and the spacing of them. Study authors reported on other chlorinated solvents, but it appears that primary data was only generated for 2 in this study. Data regarding the others was pulled from previous studies and recalculated in current study.			

Overall Quality Determination**Uninformative**

Study Citation:	Behechti, A., Ballhorn, L., Kettrup, A. (1995). Toxicity of chlorinated alkanes on the alga <i>Scenedesmus subspicatus</i> in a closed test vessel. Fresenius Environmental Bulletin 4(3):148-153.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Scendesmus subspicatus</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	10214703			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Test substance was identified by name only.	
	Metric 2: Test Substance Source	Low	Test source was Aldrich, but the test substance was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity for all test substances in this study were reported as 98% or higher.	
Domain 2: Test Design				
	Metric 4: Negative Controls	Uninformative	A concurrent negative control group was not reported.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail—closed test system was used for volatile test substance to compare with open test system.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	Medium	Test concentrations were analyzed at the beginning of the test using GC analysis or headspace technique. Test substance concentration was not determined at the end of the test.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and exposure frequency were reported (72h) and appropriate for the study type and outcome of interest	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	Increasing concentration factors were given and were reported to cover a range of 0 to 100% survival of algae, but actual chemical concentrations were not given.	
	Metric 12: Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized	
	Metric 15: Number of Organisms and Replicates per Group	Low	All test flasks contained the same initial algal concentration, but replicates were not reported.	

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Study Citation:	Behechti, A., Ballhorn, L., Kettrup, A. (1995). Toxicity of chlorinated alkanes on the alga <i>Scenedesmus subspicatus</i> in a closed test vessel. Fresenius Environmental Bulletin 4(3):148-153.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Scenedesmus subspicatus</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported		
Health Outcome:	Development/Growth		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	10214703		
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
Metric 16:	Adequacy of Test Conditions	Medium	OECD guidelines were cited for culturing and testing conditions/methods. Little details were provided in the paper on environmental conditions, however, the algae performed well enough to get LC50 results.
Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest
Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups. Measurements were taken daily at the same time each day.
Domain 6: Confounding / Variable Control			
Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis			
Metric 21:	Statistical Methods	Low	Statistical analysis was performed but not described adequately. EC50 calculation methods were not reported.
Metric 22:	Reporting of Data	Medium	Control group outcomes were not reported, just EC50s.
Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability
Additional Comments:	A concurrent control group was not included in the algal toxicity test. This evaluation form is relevant to 1,2 dichloropropane and its isomer 2,2 dichloropropane.		
Overall Quality Determination		Uninformative	

Study Citation:	Freitag, D., Ballhorn, L., Behecti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Scenedesmus subspicata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	660810			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical was identified by name only
	Metric 2:	Test Substance Source	Low	The test substance source was reported nor was it analytically verified.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Reporting of EC50 implies the use of a control, and OECD guidelines were cited, which would indicate use of a control. .
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how the algae was allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Only limited details were provided about test substance preparation and the experimental system.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were administered in closed test containers to prevent loss of substance due to volatility. Aeration before the test start with CO2 enriched air with optimized air space.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured using gas chromatography
	Metric 10:	Exposure Duration and Frequency	Medium	Algae EC50s were for 72hr not 96hr. Exposure was for 96hr.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	OECD methodology is cited for test protocol, little information was provided in the paper regarding test exposure groups and spacing of exposure levels
	Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Algae was from a continuously irradiated algae culture, though exact source was not specified.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of test organisms and replicates was not reported.
Domain 5: Outcome Assessment				
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Study Citation:	Freitag, D., Ballhorn, L., Behechti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Scenedesmus subspicata</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	660810			
Domain	Metric	Rating	Comments	
	Metric 16: Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate.	
	Metric 17: Outcome Assessment Methodology	Medium	EC50s were reported, but for 72hr rather than 96hr	
	Metric 18: Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol were limited, though OECD guidelines were cited for the the protocol.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical analysis to determine EC50s was performed by plotting the linear percentage of growth inhibition against the logarithm of the concentration.	
	Metric 22: Reporting of Data	Low	EC50s were the only data reported. Control responses were not reported.	
	Metric 23: Explanation of Unexpected Outcomes	Low	They study did not report any measures of variability, no confidence intervals.	
Additional Comments:	OECD guidelines were cited for study protocol, but little extra information was provided in this paper, thus the numerous low ratings on many of the metrics.			
Overall Quality Determination		Low		

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Selenastrum capricornutum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	Low	The test substance identity was NOT analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that test flasks were randomly redistributed each sampling day.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were measured using appropriate analytical technologies and methods.QC: Because of leakage of screw capped flasks, measured concentrations showed extreme variability among replicates and no correlation to initial concentration.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	All pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The number of test organisms and replicates (3) were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Selenastrum capricornutum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest, and it also reported a comparison of algicidal versus algistatic response.	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were reasonably well described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	None			
Overall Quality Determination		High		

Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Limanda limanda</i> ; Dabs from the UK—species was not specified.; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical was identified by name only.
	Metric 2:	Test Substance Source	Low	Test substance source was not reported, nor was it analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and/or grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Uninformative	The study does not state the use of a negative control.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The study provided few details on exposure media preparation and the experimental system
	Metric 8:	Consistency of Exposure Administration	Low	The study provided few details on exposure administration
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	No information is provided on the number of exposure groups and spacing of exposure levels.
	Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the animals was not reported, and the species was not stated, just the common name.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized
	Metric 15:	Number of Organisms and Replicates per Group	Low	5 test organisms per container, but the number of replicates was not reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate

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Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Limanda limanda</i> ; Dabs from the UK—species was not specified.; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	LC50s were reported and were the intended outcomes.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment were not reported.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Doudoroff (1951) was cited for obtaining LC50s
	Metric 22:	Reporting of Data	Medium	Data for exposure-related findings were reported for most, but not all outcomes. Control group data was not reported.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability
Additional Comments:	The study did not report the use of a concurrent negative control group, the number of exposure groups and exposure concentrations.A field survey was also conducted in this study of concentrations of various chemicals in a variety of species sampled from an industrial area. I did not include a review for that portion due to the fact that the source of any chemical accumulating in the tissues could not necessarily be identified and a specific concentration of said chemical was not determined			

Overall Quality Determination

Uninformative

Study Citation:	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Vertebrate; Fish; <i>Menidia beryllina</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	18670		
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	Low	Test substance identified by name only.
	Metric 2: Test Substance Source	Low	Test substance source was not reported, and the test substance was not analytically verified by the performing laboratory.
	Metric 3: Test Substance Purity	Medium	All chemicals were reported as either research or chemically pure grades, though no other specifics were given.
Domain 2: Test Design			
	Metric 4: Negative Controls	Low	It was not clearly reported that a negative control was used. "The estimated death rate of control fish during the experiment was about 1.3 percent and 3.0 percent for fresh and salt water fish respectively." This implies that a negative control was used. However, unclear whether there was a true control or the stock tank was used as control.
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not clearly reported. "The estimated death rate of control fish during the experiment was about 1.3 percent and 3.0 percent for fresh and salt water fish respectively." However, unclear whether there was a true control or the stock tank was used as control.
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	Uninformative	Test media preparations methods were not provided in detail. No measures were taken to minimize loss of test substance during the test. The study reported some chemicals were insoluble and LC50s reflected the total chemical added, not simply the soluble fraction. Some chemicals were volatile and there was loss via vaporization.
	Metric 8: Consistency of Exposure Administration	Low	Exposure administration may have been inconsistent across groups. All exposure levels were aerated. The study reported some chemicals were insoluble and some were volatile and there was loss via vaporization.
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	The number of exposure groups and the spacing of the levels appeared appropriate for a dose response
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit
Domain 4: Test Organism			
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Study Citation:	Dawson, G. W., Jennings, A. L., Drozdowski, D., Rider, E. (1977). The acute toxicity of 47 industrial chemicals to fresh and saltwater fishes. Journal of Hazardous Materials 1(4):303-318.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Menidia beryllina</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18670			
Domain	Metric	Rating	Comments	
	Metric 13: Test Organism Characteristics	Low	Test species were collected in nets from Horseshoe Bay in Sandy Hook, NJ. Age was not specified.	
	Metric 14: Acclimatization and Pretreatment Conditions	Medium	The test organisms were acclimatized to test conditions. Unclear whether all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Low	The number of test organisms and/or replicates was not reported.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	D.O. was measured daily. There was aeration provided due to the nature of the saltwater and to the size and oxygen demands of the species used. Ph was also monitored but results were not provided, therefore cannot evaluate whether differences occurred between control and exposed populations.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest (LC50s)	
	Metric 18: Consistency of Outcome Assessment	Medium	Outcomes were assessed daily for 96hr and dead fish were removed immediately. Few other details were provided.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	Low	LC50s were calculated by plotting survival percentages on semi-logarithmic paper and drawing a straight line "fit" through or near significant points.	
	Metric 22: Reporting of Data	Medium	Data outcomes were reported for each treatment group, but no data was reported regarding the control group.	
	Metric 23: Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.	
Additional Comments:	Test media preparation methods and control response were not clearly provided. The study reported some chemicals were insoluble and LC50s reflected the total chemical added, not simply the soluble fraction. Some chemicals were volatile and there was loss via vaporization. Exposure concentrations were not measured and LC 50 values were presented without any measures of variability.			

Overall Quality Determination

Uninformative

Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Elminus modestus</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only	
	Metric 2: Test Substance Source	Low	Test substance source was not reported, nor was it analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Purity and/or grade of test substance were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	Uninformative	The study does not state the use of a negative control.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The study provided few details on exposure media preparation and little information was provided on the experimental system	
	Metric 8: Consistency of Exposure Administration	Low	The study provided few details on exposure administration	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type—48h LC50	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	No information is provided on the number of exposure groups and spacing of exposure levels.	
	Metric 12: Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Low	The source of the animals was not reported.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized	
	Metric 15: Number of Organisms and Replicates per Group	Low	20 test organisms per container, but the number of replicates was not reported.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate	
	Metric 17: Outcome Assessment Methodology	High	LC50s were reported and were the intended outcomes.	

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Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Elminus modestus</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment were not reported.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Doudoroff (1951) was cited for obtaining LC50s
	Metric 22:	Reporting of Data	Medium	Data for exposure-related findings were reported for most, but not all outcomes. Control group data was not reported.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability
Additional Comments:	The study did not report the use of a concurrent negative control group, the number of exposure groups and exposure concentrations. A field survey was also conducted in this study of concentrations of various chemicals in a variety of species sampled from an industrial area. I did not include a review for that portion due to the fact that the source of any chemical accumulating in the tissues could not necessarily be identified and a specific concentration of said chemical was not determined.			

Overall Quality Determination**Uninformative**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance were reported, and the substance was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.	
	Metric 15: Number of Organisms and Replicates per Group	Low	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects, although only two replicates were used.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were clearly described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	None			

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; 3-4 day; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The source, lot number and form of the test substance were reported and the substance was analytically verified.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses (survival) of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The highest concentration did not have a sufficient response to calculate an LC50.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.	
	Metric 15: Number of Organisms and Replicates per Group	Low	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects, although only two replicates were used.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.		
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)		
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; 3-4 day; Juvenile		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	5468652		
Domain	Metric	Rating	Comments
Domain 6: Confounding / Variable Control			
Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.
Metric 20:	Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
Metric 21:	Statistical Methods	High	Statistical methods were clearly described.
Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments: None			
Overall Quality Determination		High	

Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only.	
	Metric 2: Test Substance Source	Low	Test substance manufacturer was not reported and the test substance was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Chemical purity and grade were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system was described in adequate detail, methods for preparation of test media were minimal.	
	Metric 8: Consistency of Exposure Administration	Medium	Exposures were administered consistently across study groups but few details were provided.	
	Metric 9: Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured before and after tests. "The mean measured concentrations of 1,3-dichloropropane inseawater ranged from 24-47% of nominal during the 96-hour exposure." Results were based on measured concentrations.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Medium	Reported having 5 test concentrations ranging from 0.52 -11 ppm, but did not indicate the spacing of the concentrations. Results of interest still reported.	
	Metric 12: Testing at or Below Solubility Limit	High	Solvent was employed to aid in dissolution	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effect. "For each concentration and control, twotest containers were placed in each of two separate sections ofone aquarium, providing two true duplicates (a total of 20 shrimp)."	
Domain 5: Outcome Assessment				
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Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions of test system were conducive to maintenance of organism health
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	All treatments assessed after 96H and all treatment conditions were the same excluding the exposure chemical.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the text
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	This evaluation form is for the 96 hr acute toxicity test. ” The 96-hour LC50 of 1,3-dichloropropane to mysid shrimp was 7.3 ppm with 95% confidence limits of 2.5-21 ppm.”The exposure concentrations, test media preparation details, and mortality data for control and treatment groups were not reported.			

Overall Quality Determination**Medium**

Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical was identified by name only.
	Metric 2:	Test Substance Source	Low	Test substance manufacturer was not reported and the test substance was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Chemical purity and grade were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system was described in adequate detail, methods for preparation of test media were minimal.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures were administered consistently across study groups but few details were provided.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured before and after tests. "In the 28-day chronic exposure, mean measured concentrations were 62-73% of nominal." Results were based on measured concentrations.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	Reported having 5 test concentrations ranging from 0.5 to 7.7 pm, but did not indicate the spacing of the concentrations. Results of interest still reported.
	Metric 12:	Testing at or Below Solubility Limit	High	Solvent was employed to aid in dissolution
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported. "For each concentration and control, two test containers were placed in each of two separate sections of one aquarium, providing two true duplicates (a total of 20 shrimp)."
Domain 5: Outcome Assessment				
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Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions of test system were conducive to maintenance of organism health.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology to record the time to formation of brood pouches was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	High	All treatments were assessed for a 28d period for mortality, brood pouch formation, and for young production. 10 young were used for an F1 generation and observed for 10-12 days.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	This evaluation form is for the brood pouch formation endpoint evaluated in the mysid chronic test. The exposure concentrations, data for control and treatment groups, and outcome assessment methodology were not clearly reported.			

Overall Quality Determination**Medium**

Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only.	
	Metric 2: Test Substance Source	Low	Test substance manufacturer was not reported and the test substance was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Chemical purity and grade were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system was described in adequate detail, methods for preparation of test media were minimal.	
	Metric 8: Consistency of Exposure Administration	Medium	Exposures were administered consistently across study groups but few details were provided.	
	Metric 9: Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured before and after tests."In the 28-day chronic exposure, mean measured concentrations were 62-73% of nominal." Results were based on measured concentrations.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	Reported having 5 test concentrations ranging from 0.5 to 7.7 pm, but did not indicate the spacing of the concentrations. Results of interest still reported.	
	Metric 12: Testing at or Below Solubility Limit	High	Solvent was employed to aid in dissolution	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported. "For each concentration and control, two test containers were placed in each of two separate sections of one aquarium, providing two true duplicates (a total of 20 shrimp)."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Environmental conditions of test system were conducive to maintenance of organism health.	
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Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology to record the survival of test organisms was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	High	All treatments were assessed for a 28d period for mortality, brood pouch formation, and for young production. 10 young were used for an F1 generation and observed for 10-12 days.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	This evaluation form is for the survival of mysid juveniles in the 28 day chronic test. The exposure concentrations, data for control and treatment groups, and outcome assessment methodology were not clearly reported.			

Overall Quality Determination**Medium**

Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only.	
	Metric 2: Test Substance Source	Low	Test substance manufacturer was not reported and the test substance was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Chemical purity and grade were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system was described in adequate detail, methods for preparation of test media were minimal.	
	Metric 8: Consistency of Exposure Administration	Medium	Exposures were administered consistently across study groups but few details were provided.	
	Metric 9: Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured before and after tests. "In the 28-day chronic exposure, mean measured concentrations were 62-73% of nominal." Results were based on measured concentrations.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure was reported and suitable for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Low	Reported having 5 test concentrations, but did not indicate the spacing of the concentrations. Results of interest still reported.	
	Metric 12: Testing at or Below Solubility Limit	High	Solvent was employed to aid in dissolution	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported. "For each concentration and control, twotest containers were placed in each of two separate sections of one aquarium, providing two true duplicates (a total of 20 shrimp)."	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Environmental conditions of test system were conducive to maintenance of organism health.	
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Study Citation:	Hollister, T. A., Parker, A. H., Jr, Parrish, P. R. (1968). Acute and chronic toxicity of five chemicals to mysid shrimp (<i>Mysidopsis bahia</i>). :15.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Other (metabolite, degradant, etc.)			
HERO ID:	3617735; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology to record the number of offspring was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	High	All treatments were assessed for a 28d period for mortality, brood pouch formation, and for young production. 10 young were used for an F1 generation and observed for 10-12 days.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	This evaluation form is for the number of offspring evaluated in the mysid chronic test. The exposure concentrations, data for control and treatment groups, and outcome assessment methodology were not clearly reported.			

Overall Quality Determination**Medium**

Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Chemical purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system and methods for preparation of test media were described in adequate detail. Notable loss of the test substance was observed, but concentrations were measured.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported, but minor inconsistencies in administration of exposures among study groups were identified.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Medium	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance, exposure concentrations were fairly close together and no effects were observed. The NOEC value provided is a greater than value.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
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Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	Medium	Minor limitations were identified regarding environmental conditions, but these are not likely to have a substantial impact on results.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	The study reported minor differences among the study groups with respect to environmental conditions or other non-treatment-related factors, but these are unlikely to have a substantial impact on results.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were clearly described.
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group and were adequate to determine values.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance exposure, the test concentrations were close together and no effects were observed. A greater than NOEC value is provided.			

Overall Quality Determination**High**

Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Chemical purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system and methods for preparation of test media were described in adequate detail. Notable loss of the test substance was observed, but concentrations were measured.	
	Metric 8: Consistency of Exposure Administration	Medium	Details of exposure administration were reported, but minor inconsistencies in administration of exposures among study groups were identified.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance, exposure concentrations were fairly close together and no effects were observed. The NOEC value provided is a greater than value.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Medium	Minor limitations were identified regarding environmental conditions, but these are not likely to have a substantial impact on results.	

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Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	The study reported minor differences among the study groups with respect to environmental conditions or other non-treatment-related factors, but these are unlikely to have a substantial impact on results.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were clearly described.
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group and were adequate to determine values.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance, exposure concentrations were fairly close together and no effects were observed. The NOEC value provided is a greater than value.			
Overall Quality Determination		High		

Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	Low	The test substance identity was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Chemical purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental system and methods for preparation of test media were described in adequate detail. Notable loss of the test substance was observed, but concentrations were measured.	
	Metric 8: Consistency of Exposure Administration	Medium	Details of exposure administration were reported, but minor inconsistencies in administration of exposures among study groups were identified.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance, exposure concentrations were fairly close together and no effects were observed. The NOEC value provided is a greater than value.	
	Metric 12: Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Medium	Minor limitations were identified regarding environmental conditions, but these are not likely to have a substantial impact on results.	

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Study Citation:	Hunter/ESE Inc, (1989). 1,2-Dichloropropane: chronic toxicity to the mysid under flow-through conditions with cover letter.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Mysidopsis bahia</i> ; Juvenile			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2803625			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	The study reported minor differences among the study groups with respect to environmental conditions or other non-treatment-related factors, but these are unlikely to have a substantial impact on results.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were clearly described.
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group and were adequate to determine values.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The number of exposure groups and spacing of exposure levels were not adequate to calculate a dose response curve. Due to volatilization of the test substance exposure, the test concentrations were close together and no effects were observed. A greater than NOEC value is provided.			
Overall Quality Determination		High		

Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Phaeodactylum tricornutum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mechanistic-Photosynthesis			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only	
	Metric 2: Test Substance Source	Low	Test substance source was not reported, nor was it analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Low	Purity and/or grade of test substance were not reported.	
Domain 2: Test Design				
	Metric 4: Negative Controls	Uninformative	The study does not state the use of a negative control.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The study provided few details on exposure media preparation and little information was provided on the experimental system	
	Metric 8: Consistency of Exposure Administration	Low	The study provided few details on exposure administration	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.	
	Metric 10: Exposure Duration and Frequency	Uninformative	The duration of the exposure was not reported.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	No information is provided on the number of exposure groups and spacing of exposure levels.	
	Metric 12: Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Low	The source of the algae was not reported.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized	
	Metric 15: Number of Organisms and Replicates per Group	Low	The number of test organisms and replicates was not reported.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate	
	Metric 17: Outcome Assessment Methodology	High	IC50s were reported and were the intended outcomes.	

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Study Citation:	Pearson, C. R., McConnell, G. (1975). Chlorinated C1 and C2 hydrocarbons in the marine environment. Proceedings of the Royal Society: Biological Sciences 189(1096):305-332.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Phaeodactylum tricornutum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Mechanistic-Photosynthesis			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	75062			
Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment were not reported.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Doudoroff (1951) was cited for obtaining IC50s
	Metric 22:	Reporting of Data	Medium	Data for exposure-related findings were reported for most, but not all outcomes. Control group data was not reported.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability
Additional Comments:	The study did not report the use of a concurrent negative control group, the number of exposure groups and exposure concentrations. A field survey was also conducted in this study of concentrations of various chemicals in a variety of species sampled from an industrial area. I did not include a review for that portion due to the fact that the source of any chemical accumulating in the tissues could not necessarily be identified and a specific concentration of said chemical was not determined.			

Overall Quality Determination**Uninformative**

Study Citation:	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> ".			
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Skeletonema costatum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	10610562			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	The chemical was identified by name and CASRN.	
Metric 2:	Test Substance Source	Low	The source was not reported.	
Metric 3:	Test Substance Purity	Low	Purity and/or grade of the test substance were not reported.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
Metric 5:	Negative Control Response	High	The biological response of the negative control group was reported and reasonable for assessed outcomes (Tables 2-4).	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The study is lacking detail on measures taken to appropriately prepare test concentrations; however, the experiments were conducted in closed vessels.	
Metric 8:	Consistency of Exposure Administration	Low	Reporting omissions are likely to have a substantial impact on results.	
Metric 9:	Measurement of Test Substance Concentration	Medium	Analytical technologies and methods were not reported, while measured concentrations were similar to nominal.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type (120 h). Intermediate duration values were also reported.	
Metric 11:	Number of Exposure Groups/Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were suitable for a dose response.	
Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Low	The source of the test algae was not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether pretreatment conditions were the same for control and exposed groups.	
Metric 15:	Number of Organisms and Replicates per Group	Low	The initial number of test organisms was not reported, but 3 replicates were apparently used.	
Domain 5: Outcome Assessment				
Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate.	
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Study Citation:	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> ".
Duration:	Overall Duration: 4 - 10 days; Exposure Duration: 4 - 10 days
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Skeletonema costatum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,2-Dichloropropane-Parent compound
HERO ID:	10610562

Domain	Metric	Rating	Comments
	Metric 17: Outcome Assessment Methodology	Low	The outcome assessment methodology was not clearly reported.
	Metric 18: Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment were limited.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical methods were adequately described.
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.
	Metric 23: Explanation of Unexpected Outcomes	Medium	Minor uncertainties regarding chemical concentration variability were identified.
Additional Comments:	Re-evaluation of results show that few exposure details were reported. The data presented in this reference is the same data reported in HERO ID 5468652. Authors reanalyzed measured chemical concentrations per day reported in 5468652 (Table 2) to geometric means in range of days (0-3, 0-4, 0-5; Table 1). Mean cell counts and SD (Table 2) are identical to results reported in 5468652 (Table 3).		

Overall Quality Determination**Medium**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Skelotonema costatum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Source	Low	The test substance identity was NOT analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	Purity was reported as 99.9%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.
	Metric 5:	Negative Control Response	High	The biological responses (survival) of the negative control group was adequate.
	Metric 6:	Randomized Allocation	Medium	The study reported that test flasks were randomly redistributed each sampling day.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	All pretreatment conditions were the same for control and exposed organisms.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The number of test organisms and replicates (3) were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organism environmental conditions were conducive to maintenance of organism health.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest, and it also reported a comparison of algicidal versus algistatic response.

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 4 - 10 days			
Exposure Route, Media, Path:	Aquatic (marine); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vegetation; Non-vascular Plants; <i>Skelotonema costatum</i> ; Not Applicable (e.g., fungi or algae studies) or Not Reported			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were reasonably well described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	None			

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1987). Fish toxicity studies.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (brackish); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Cyprinodon variegatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2799638			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	1,2-Dichloropropane was tested in this paper.
	Metric 2:	Test Substance Source	Low	No Source was reported.
	Metric 3:	Test Substance Purity	Low	Purity was not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Uninformative	No negative controls were reported.
	Metric 5:	Negative Control Response	Uninformative	No control response was reported.
	Metric 6:	Randomized Allocation	Low	No random allocation reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The study reports that range finding was performed in a static system and a continuous flow design was used for definitive tests, but no other details are provided (Page 4/6).
	Metric 8:	Consistency of Exposure Administration	Uninformative	The study does not provide enough data to determine if treatments were administered consistently.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	Nothing was reported to indicate if actual or nominal values were used.
	Metric 10:	Exposure Duration and Frequency	Uninformative	The test was over a 96 hour period but nothing is provided to indicate the frequency of renewal in the flow-through systems.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	Treatment concentrations or spacing are not reported for the range finding or definitive bioassay.
	Metric 12:	Testing at or Below Solubility Limit	Low	The estimated LC50 was 113mg/L, which is below the solubility reported in the final scope for this compound (8600 mg/L).
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source was reported as from a wild population near Freeport TX, which would be inappropriate if previously exposed to chemicals.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	The fish were reported as acclimatized for 2 weeks prior to testing.
	Metric 15:	Number of Organisms and Replicates per Group	Low	10 individuals were reported per treatment concentration. No replication was reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Uninformative	No information was provided to assess animal housing or environmental conditions.

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Study Citation:	Dow Chemical, (1987). Fish toxicity studies.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (brackish); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Cyprinodon variegatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2799638			
Domain	Metric	Rating	Comments	
	Metric 17: Outcome Assessment Methodology	Low	Mortality was the endpoint, however, the study did not report the criteria for mortality or the frequency of checks for this endpoint.	
	Metric 18: Consistency of Outcome Assessment	Uninformative	It is not possible to assess the metric from the study.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	Uninformative	It is not possible to assess the metric from the study.	
	Metric 20: Outcomes Unrelated to Exposure	Uninformative	It is not possible to assess the metric from the study.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	Low	The report details that Sprague 1969 was used, however, provides no detail on the statistics used for LC50 estimation.	
	Metric 22: Reporting of Data	Low	LC50 is presented with no variance.	
	Metric 23: Explanation of Unexpected Outcomes	Uninformative	It is not possible to assess this metric for this study.	
Additional Comments:	Limited methods are presented on page 4/6 for this study. A LC50 value for DCP is presented on page 5/6.			

Overall Quality Determination**Uninformative**

Study Citation:	Heitmuller, P. T., Hollister, T. A., Parrish, P. R. (1981). Acute toxicity of 54 industrial chemicals to sheepshead minnows (<i>Cyprinodon variegatus</i>). Bulletin of Environmental Contamination and Toxicology 27(5):596-604.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (brackish); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Cyprinodon variegatus</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18110; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	Low	Chemical was identified by name only.	
	Metric 2: Test Substance Source	Low	Test substance manufacturer was not listed and was not analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	Medium	All chemicals used in this study were >%80 purity analytical grade, but specific purity for each chemical was not given.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	Low	The biological response of the negative control groups was not reported.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Uninformative	The use of measures to minimize loss of test substance was not reported.	
	Metric 8: Consistency of Exposure Administration	Low	The study provided few details on exposure administration.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported.	
	Metric 10: Exposure Duration and Frequency	High	96H acute test for sheepshead minnows with 10 /treatment.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	Low	'The concentrations increased in geometrical progression with a ratio of 1.8 or 3.2 as indicated in the results section'	
	Metric 12: Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized.	
	Metric 15: Number of Organisms and Replicates per Group	Low	The number of test replicates was not reported. 10 organisms per container.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to evaluate if adequate.	

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Study Citation:	Heitmuller, P. T., Hollister, T. A., Parrish, P. R. (1981). Acute toxicity of 54 industrial chemicals to sheepshead minnows (<i>Cyprinodon variegatus</i>). Bulletin of Environmental Contamination and Toxicology 27(5):596-604.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (brackish); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Vertebrate; Fish; <i>Cyprinodon variegatus</i> ; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	18110; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735			
Domain		Metric	Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcomes of interest.
	Metric 18:	Consistency of Outcome Assessment	Medium	Use of different test volumes across study groups- 3L test solution vs 15L test solution both with 10 organisms.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were clearly described.
	Metric 22:	Reporting of Data	Medium	Exposure related findings were reported for all 54 chemicals tested, but little information on control response was reported.
	Metric 23:	Explanation of Unexpected Outcomes	Low	Insufficient information was provided to determine if excessive variability or unexpected outcomes occurred.
Additional Comments:	This evaluation form is for 1,3- Dichloropropane, an isomer of 1,2- Dichloropropane. The use of measures to minimize the loss of volatile test substance was not reported. Mortality data for each treatment group were not reported. Only LC 50 values (with no confidence limits) were provided.			

Overall Quality Determination**Uninformative**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified definitively.
	Metric 2:	Test Substance Source	High	The test substance identity was analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	Purity was reported as 99.9%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.
	Metric 5:	Negative Control Response	High	The biological responses of the negative control group were adequate for all measurements.
	Metric 6:	Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.
	Metric 12:	Testing at or Below Solubility Limit	N/A	Dosing was via gavage.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health.

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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcomes of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	No mortalities were reported so statistical analysis was not used or needed.
	Metric 22:	Reporting of Data	Low	No mortalities were reported as part of the narrative for all treatment and control groups.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments: This evaluation is an assessment of the mortality outcome.				

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The test substance identity was analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate for all measurements.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	N/A	Dosing was via gavage.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcomes of interest.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were clearly described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	This evaluation is an assessment of the development/growth outcome.			
Overall Quality Determination		High		

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Nutritional & Metabolic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The test substance identity was analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate for all measurements.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	N/A	Dosing was via gavage.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcomes of interest.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Nutritional & Metabolic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were clearly described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	This evaluation is an assessment of the nutritional and metabolic outcome, specifically looking at body temperature and heart rate.			
Overall Quality Determination		High		

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Neurological			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The test substance identity was analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate for all measurements.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	N/A	Dosing was via gavage.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcomes of interest.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Neurological			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	Low	These were routine observations that weren't quantified, so no statistical analysis was used or needed.	
	Metric 22: Reporting of Data	Low	These were only routine observations reported numerically and mentioned as part of the narrative for all treatment and control groups. No analysis was reported.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	Authors made routine neurotoxicological observations for several standard elements.			

Overall Quality Determination**High**

Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	The test substance was identified definitively.	
	Metric 2: Test Substance Source	High	The test substance identity was analytically verified by the performing laboratory.	
	Metric 3: Test Substance Purity	High	Purity was reported as 99.9%.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	Study authors reported using an appropriate concurrent negative control group.	
	Metric 5: Negative Control Response	High	The biological responses of the negative control group were adequate for all measurements.	
	Metric 6: Randomized Allocation	Medium	The study reported that organisms were randomly allocated into study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	High	The experimental system and methods for preparation of test media were described in adequate detail.	
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	High	Exposure concentrations were measured using appropriate analytical technologies and methods.	
	Metric 10: Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type.	
	Metric 11: Number of Exposure Groups/ Spacing of Exposure Levels	High	The number of exposure groups and spacing of exposure levels were justified for a dose response.	
	Metric 12: Testing at or Below Solubility Limit	N/A	Dosing was via gavage.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	High	The test organisms were adequately described and were obtained from a reliable source.	
	Metric 14: Acclimatization and Pretreatment Conditions	High	The test organisms were acclimatized to test conditions and all pretreatment conditions were the same for control and exposed organisms.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	High	Organism housing, environmental conditions, food, water, and nutrients were conducive to maintenance of health.	
	Metric 17: Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcomes of interest.	
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Study Citation:	Dow Chemical, (1988). Letter from Dow Chem Co to U.S. EPA regarding submission of final study reports for 1,2-dichloropropane with attachments.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Food/Diet; Dietary			
Taxa, Species, Age:	Vertebrate; Mammalian; <i>Rattus norvegicus</i> ; Fisher 344; Adult			
Health Outcome:	Behavioral			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	5468652			
Domain	Metric	Rating	Comments	
	Metric 18: Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions.	
	Metric 20: Outcomes Unrelated to Exposure	High	There were no differences among groups that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistical methods were clearly described.	
	Metric 22: Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.	
Additional Comments:	None			
Overall Quality Determination		High		

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Allolobophora tuberculata</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system was described, and the contact filter paper test developed by EEC was used. Test media preparation details were vague. It was not reported whether the test chemical was dissolved in a solvent or not. It was reported that tests were done to ensure that the test chemical did not volatilize along with the solvent (if used) before earthworms were added to the vials.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported (48 hours) and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were similar for controls and study groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Allolobophora tuberculata</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organisms were housed in glass vials (Wheaton, 3 oz. snap cap) that were 8 cmlong and 3 cm in diameter during exposure. The vials were kept on the side at 20oC in a darkened incubator for 48 hours. One ml of water was added to all vials to maintain moisture for earthworm survival. The contact filter paper test followed the guidelines outlined in Edwards, 1983.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described. The LC50 value was calculated using the method of Litchfield and Wilcoxon (1949).
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	Test organisms were not characterized (size, age, etc.)well. The exposure concentrations and spacing of exposure levels were not given in the paper. Mortality data were not given for each treatment group and control. Only LC50 values along with confidence intervals were reported.			

Overall Quality Determination

Uninformative

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Allolobophora tuberculata</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the artificial soil test developed by EEC was used. However, test media preparation details were not given It was not reported whether the test chemical was dissolved in a solvent or not, and whether soil was thoroughly mixed to ensure homogenous distribution of test substance. Nominal concentrations were not reported, and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that at least five concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	N/A	Exposure via soil.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Allolobophora tuberculata</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Tests were conducted in covered glass dishes 6.5 cm high and 12.5 cm in diameter. The dishes were incubated at 20oC. Other environmental conditions were not reported.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and was consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was conducted. The LC50 values for each chemical were calculated using the method of Litchfield and Wilcoxon (1949) and were reported as mg chemical/kg dry wt of artificial soil.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The exposure concentrations, spacing of exposure levels, and control response were not reported. Exposure concentrations were not measured and mortality data for each treatment group were not reported. Only LC50 value along with confidence intervals were reported.			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98%.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the contact filter paper test developed by EEC was used. Test media preparation details were vague. It was not reported whether the test chemical was dissolved in a solvent or not. It was reported that tests were done to ensure that the test chemical did not volatilize along with the solvent (if used) before earthworms were added. However, nominal concentrations were not reported and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organisms were housed in glass vials (Wheaton, 3 oz. snap cap) that were 8 cmlong and 3 cm in diameter during exposure. The vials were kept on the side at 20oC in a darkened incubator for 48 hours. One ml of water was added to all vials to maintain moisture for earthworm survival. The contact filter paper test followed the guidelines outlined in Edwards, 1983.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described. The LC50 value was calculated using the method of Litchfield and Wilcoxon (1949).
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	Test organisms were not characterized (size, age, etc.) well. The exposure concentrations and spacing of exposure levels were not given in the paper. Mortality data were not given for each treatment group and control. Only LC50 values along with confidence intervals were reported.			

Overall Quality Determination

Uninformative

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the artificial soil test developed by EEC was used. However, test media preparation details were not given. It was not reported whether the test chemical was dissolved in a solvent or not, and whether soil was thoroughly mixed to ensure homogenous distribution of the test substance. Nominal concentrations were not reported, and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	N/A	Exposure via soil.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Tests were conducted in covered glass dishes 6.5 cm high and 12.5 cm in diameter. The dishes were incubated at 20oC. Other environmental conditions were not reported.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and was consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was conducted. The LC50 values for each chemical were calculated using the method of Litchfield and Wilcoxon (1949) and were reported as mg chemical/kg dry wt of artificial soil.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	The exposure concentrations, spacing of exposure levels, and control response were not reported. Exposure concentrations were not measured and mortality data for each treatment group were not reported. Only LC50 value along with confidence intervals were reported.			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2136924			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The test substance was identified by name in Table 1: 1,2-dichloropropane. No CASRN provided.
	Metric 2:	Test Substance Source	Low	The source of the chemical was not reported.
	Metric 3:	Test Substance Purity	Low	Purity not stated.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Control group did not report inclusion of an organic solvent. Unclear whether 1,2-dichloropropane treatments were added in an organic solvent.
	Metric 5:	Negative Control Response	High	Response of control group shown in Table 1.
	Metric 6:	Randomized Allocation	Low	Random allocation was not stated.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The authors did not account for volatilization of the test chemical prior to testing or during testing (no mention of a closed system either for preparing the manure substrate with test chemical or for the exposure period in the Petri dishes).
	Metric 8:	Consistency of Exposure Administration	Medium	Exposure administration appeared to be consistent among groups; however unclear if a solvent was utilized to mix 1,2-dichloropropane into the manure substrate, and, if so, the same amount of solvent was applied across chemical treatments.
	Metric 9:	Measurement of Test Substance Concentration	Low	Measurement of exposure concentrations not reported.
	Metric 10:	Exposure Duration and Frequency	Uninformative	The exposure period was 8 weeks with evaluation for growth and reproduction stated at 4 weeks and 6 weeks. However, manure 'to which test substance was added' was not reapplied until week 4 and again at week 6.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	6 exposure concentrations and a control group were utilized. The difference between the lowest exposure concentration and the greatest exposure concentration is approximately three-fold.
	Metric 12:	Testing at or Below Solubility Limit	Medium	High concentrations of 1,2-dichloropropane were stated in this experiment - 34,800; 46,300; 57,800; 69,300; 80,800; 92,300 mg/kg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source and sex of organisms were not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Paper does not indicate acclimatization.

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Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2136924			
Domain	Metric	Rating	Comments	
	Metric 15: Number of Organisms and Replicates per Group	Low	Study utilized 2 worms per Petri dish, 5 dishes per concentration.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	Temperature stated but lighting, humidity, and other environmental factors not stated. Unclear if moisture content in the manure was maintained throughout the study.	
	Metric 17: Outcome Assessment Methodology	High	Authors counted earthworm cocoons.	
	Metric 18: Consistency of Outcome Assessment	High	Cocoons were removed and counted at 4 weeks and 6 weeks and a final count at 8 weeks. This seems consistent across treatment groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	Low	Not enough information provided to compare environmental conditions across study groups.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	Attrition not reported for all concentrations but no information to suggest differences among groups in animal attrition.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Authors performed ANOVA and, in instances when significant F was obtained, performed Duncan's new multiple range test (significance was established with p < 0.05).	
	Metric 22: Reporting of Data	High	Means of cocoon production are shown in Table 1 and discussed in text.	
	Metric 23: Explanation of Unexpected Outcomes	Low	Variability of the data not reported.	
Additional Comments:	None			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile			
Health Outcome:	Development/Growth			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2136924			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The test substance was identified by name in Table 1: 1,2-dichloropropane. No CASRN provided.
	Metric 2:	Test Substance Source	Low	The source of the chemical was not reported.
	Metric 3:	Test Substance Purity	Low	The purity of the chemical was not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Control group did not report inclusion of an organic solvent. Unclear whether 1,2-dichloropropane treatments were added in an organic solvent.
	Metric 5:	Negative Control Response	High	Response of control group reported in Table 1.
	Metric 6:	Randomized Allocation	Low	Random allocation was not stated.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The authors did not account for volatilization of the test chemical prior to testing or during testing (no mention of a closed system either for preparing the manure substrate with test chemical or for the exposure period in the Petri dishes).
	Metric 8:	Consistency of Exposure Administration	Medium	Exposure administration appeared to be consistent among groups; however unclear if a solvent was utilized to mix 1,2-dichloropropane into the manure substrate, and, if so, the same amount of solvent was applied across chemical treatments.
	Metric 9:	Measurement of Test Substance Concentration	Low	Measurement of exposure concentrations not reported.
	Metric 10:	Exposure Duration and Frequency	Uninformative	The exposure period was 8 weeks with evaluation for growth and reproduction stated at 4 weeks and 6 weeks. However, manure 'to which test substance was added' was not reapplied until week 4 and again at week 6.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	6 exposure concentrations and a control group were utilized. The difference between the lowest exposure concentration and the greatest exposure concentration is approximately three-fold.
	Metric 12:	Testing at or Below Solubility Limit	Medium	High concentrations of 1,2-dichloropropane were stated in this experiment - 34,800; 46,300; 57,800; 69,300; 80,800; 92,300 mg/kg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source and sex of organisms were not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Paper does not indicate acclimatization.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Study utilized 2 worms per Petri dish, 5 dishes per concentration.

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Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.		
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days		
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile		
Health Outcome:	Development/Growth		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	2136924		
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
Metric 16:	Adequacy of Test Conditions	Low	Temperature stated but lighting, humidity, and other environmental factors not stated. Unclear if moisture content in the manure was maintained throughout the study.
Metric 17:	Outcome Assessment Methodology	Low	Earthworms were weighed at 8 weeks; unclear if earthworms were weighed at 4 weeks and 6 weeks, and, if so, the handling of earthworms for this procedure.
Metric 18:	Consistency of Outcome Assessment	Medium	Earthworm weighed at 8 weeks; unclear if weights were also obtained at 4 weeks and 6 weeks.
Domain 6: Confounding / Variable Control			
Metric 19:	Confounding Variables in Test Design and Procedures	Low	Not enough information provided to compare environmental conditions across study groups.
Metric 20:	Outcomes Unrelated to Exposure	Medium	Attrition not reported for all concentrations but no information to suggest differences among groups in animal attrition.
Domain 7: Data Presentation and Analysis			
Metric 21:	Statistical Methods	High	Authors performed ANOVA and, in instances when significant F was obtained, performed Duncan's new multiple range test (significance was established with $p < 0.05$).
Metric 22:	Reporting of Data	High	Means of final weight are shown in Table 1 and discussed in text.
Metric 23:	Explanation of Unexpected Outcomes	Low	Variability of data not reported.
Additional Comments: None			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2136924			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The test substance was identified by name in Table 1: 1,2-dichloropropane. No CASRN provided.
	Metric 2:	Test Substance Source	Low	The source of the chemical was not reported.
	Metric 3:	Test Substance Purity	Low	The purity of the chemical was not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Control group did not report inclusion of an organic solvent. Unclear whether 1,2-dichloropropane treatments were added in an organic solvent.
	Metric 5:	Negative Control Response	Low	Mortality of the control group not reported.
	Metric 6:	Randomized Allocation	Low	Random allocation was not stated.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The authors did not account for volatilization of the test chemical prior to testing or during testing (no mention of a closed system either for preparing the manure substrate with test chemical or for the exposure period in the Petri dishes).
	Metric 8:	Consistency of Exposure Administration	Medium	Exposure administration appeared to be consistent among groups; however unclear if a solvent was utilized to mix 1,2-dichloropropane into the manure substrate, and, if so, the same amount of solvent was applied across chemical treatments.
	Metric 9:	Measurement of Test Substance Concentration	Low	Measurement of exposure concentrations not reported.
	Metric 10:	Exposure Duration and Frequency	Uninformative	The exposure period was 8 weeks. However, manure 'to which test substance was added' was not reapplied until week 4 and again at week 6.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	6 exposure concentrations and a control group were utilized. The difference between the lowest exposure concentration and the greatest exposure concentration is approximately three-fold.
	Metric 12:	Testing at or Below Solubility Limit	Medium	High concentrations of 1,2-dichloropropane were stated in this experiment - 34,800; 46,300; 57,800; 69,300; 80,800; 92,300 mg/kg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source and sex of organisms were not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Paper does not indicate acclimatization.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Study utilized 2 worms per Petri dish, 5 dishes per concentration.
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Study Citation:	Neuhauser, E. F., Callahan, C. A. (1990). Growth and reproduction of the earthworm <i>Eisenia fetida</i> exposed to sublethal concentrations of organic chemicals. <i>Soil Biology and Biochemistry</i> 22(2):175-180.		
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days		
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eisenia fetida</i> ; Savigny; Juvenile		
Health Outcome:	Mortality		
Chemical:	1,2-Dichloropropane-Parent compound		
HERO ID:	2136924		
Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
Metric 16:	Adequacy of Test Conditions	Low	Temperature stated but lighting, humidity, and other environmental factors not stated. Unclear if moisture content in the manure was maintained throughout the study.
Metric 17:	Outcome Assessment Methodology	Low	Unclear if dead worms were observed and removed from the system.
Metric 18:	Consistency of Outcome Assessment	Low	No details on observation frequency for mortality.
Domain 6: Confounding / Variable Control			
Metric 19:	Confounding Variables in Test Design and Procedures	Low	Not enough information provided to compare environmental conditions across study groups.
Metric 20:	Outcomes Unrelated to Exposure	Medium	Attrition not reported for all concentrations but no information to suggest differences among groups in animal attrition.
Domain 7: Data Presentation and Analysis			
Metric 21:	Statistical Methods	Uninformative	Statistics not performed for mortality observations.
Metric 22:	Reporting of Data	Uninformative	Unclear how many worms died in the highest concentration group. Results reported as 'Death at 92,300' mg/kg.
Metric 23:	Explanation of Unexpected Outcomes	Low	Variability of data not reported.
Additional Comments: None			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eudrilus eugeniae</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the contact filter paper test developed by EEC was used. Test media preparation details were vague. It was not reported whether the test chemical was dissolved in a solvent or not. It was reported that tests were done to ensure that the test chemical did not volatilize along with the solvent (if used) before earthworms were added. However, nominal concentrations were not reported and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eudrilus eugeniae</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organisms were housed in glass vials (Wheaton, 3 oz. snap cap) that were 8 cmlong and 3 cm in diameter during exposure. The vials were kept on the side at 20oC in a darkened incubator for 48 hours. One ml of water was added to all vials to maintain moisture for earthworm survival. The contact filter paper test followed the guidelines outlined in Edwards, 1983.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described. The LC50 value for was calculated using the method of Litchfield and Wilcoxon (1949).
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	Test organisms were not characterized (size, age, etc.) well. The exposure concentrations and spacing of exposure levels were not given in the paper. Mortality data were not given for each treatment group and control. Only LC50 values along with confidence intervals were reported.			

Overall Quality Determination

Uninformative

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eudrilus eugeniae</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the artificial soil test developed by EEC was used. However, test media preparation details were not given. It was not reported whether the test chemical was dissolved in a solvent or not, and whether soil was thoroughly mixed to ensure homogenous distribution of the test substance. Nominal concentrations were not reported, and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	N/A	Exposure via soil.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Eudrilus eugeniae</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Tests were conducted in covered glass dishes 6.5 cm high and 12.5 cm in diameter. The dishes were incubated at 20oC. Other environmental conditions were not reported.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and were consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was conducted. The LC50 values for each chemical were calculated using the method of Litchfield and Wilcoxon (1949) and were reported as mg chemical/kg dry wt of artificial soil.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The exposure concentrations, spacing of exposure levels, and control response were not reported. Exposure concentrations were not measured and mortality data for each treatment group were not reported. Only LC50 value along with confidence intervals were reported.			

Overall Quality Determination**Uninformative**

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Perionyx excavatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was reported but the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98%.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the contact filter paper test developed by EEC was used. Test media preparation details were vague. It was not reported whether the test chemical was dissolved in a solvent or not. It was reported that tests were done to ensure that the test chemical did not volatilize along with the solvent (if used) before earthworms were added. However, nominal concentrations were not reported, and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Perionyx excavatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Organisms were housed in glass vials (Wheaton, 3 oz. snap cap) that were 8 cmlong and 3 cm in diameter during exposure. The vials were kept on the side at 20oC in a darkened incubator for 48 hours. One ml of water was added to all vials to maintain moisture for earthworm survival. The contact filter paper test followed the guidelines outlined in Edwards, 1983.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described. The LC50 value was calculated using the method of Litchfield and Wilcoxon (1949).
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes
Additional Comments:	Test organisms were not characterized (size, age, etc.) well. The exposure concentrations and spacing of exposure levels were not given in the paper. Mortality data were not given for each treatment group and control. Only LC50 values along with confidence intervals were reported.			

Overall Quality Determination

Uninformative

Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Perionyx excavatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	Low	Chemical identified by name. No other information (CASRN, structure, etc.) was provided.	
Metric 2:	Test Substance Source	Low	The source was not reported and the test substance identity was not analytically verified by the performing laboratory.	
Metric 3:	Test Substance Purity	High	Percent purity was at least 98% .	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control.	
Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.	
Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Low	The experimental system was described, and the artificial soil test developed by EEC was used. However, test media preparation details were not given. It was not reported whether the test chemical was dissolved in a solvent or not, and whether soil was thoroughly mixed to ensure homogenous distribution of test substance. Nominal concentrations were not reported, and exposure concentrations were not measured during the study.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.	
Metric 10:	Exposure Duration and Frequency	High	The duration of exposure was reported and appropriate for the outcome of interest.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	It was reported that 5 concentrations were tested but no information was provided on the exposure concentrations and the spacing of exposure levels.	
Metric 12:	Testing at or Below Solubility Limit	N/A	Exposure via soil.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	Medium	The test organisms were grown in the authors' laboratory. The size and age of earthworms were not reported.	
Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and whether pretreatment conditions were the same for control and exposed groups.	

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Study Citation:	Neuhauser, E. F., Durkin, P. R., Malecki, M. R., Anatra, M. (1986). Comparative toxicity of ten organic chemicals to four earthworm species. Comparative Biochemistry and Physiology - Part C: Comparative Pharmacology and Toxicology 83(1):197-200.			
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days			
Exposure Route, Media, Path:	Terrestrial; Soil; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Worms (e.g., Annelids, Nematodes); <i>Perionyx excavatus</i> ; Adult			
Health Outcome:	Mortality			
Chemical:	1,2-Dichloropropane-Parent compound			
HERO ID:	2135364			
Domain		Metric	Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The numbers of test organisms and replicates were reported and sufficient to characterize toxicological effects.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Tests were conducted in covered glass dishes 6.5 cm high and 12.5 cm in diameter. The dishes were incubated at 20oC. Other environmental conditions were not reported.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome of interest.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and was consistent across study groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The study did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was conducted. The LC50 values for each chemical were calculated using the method of Litchfield and Wilcoxon (1949) and were reported as mg chemical/kg dry wt of artificial soil.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	The exposure concentrations, spacing of exposure levels, and control response were not reported. Exposure concentrations were not measured and mortality data for each treatment group were not reported. Only LC50 value along with confidence intervals were reported.			

Overall Quality Determination**Uninformative**

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Immobilization			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.
	Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.
	Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.
	Metric 5:	Negative Control Response	High	Biological response of the control group was reported for the screening test and appeared adequate.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Uninformative	The experimental system and test media preparation for the screening test was not described in detail.
	Metric 8:	Consistency of Exposure Administration	Low	Details regarding exposure administration were not reported for the screening test.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported and it is expected that actual concentrations differed significantly from nominal concentrations.
	Metric 10:	Exposure Duration and Frequency	High	The 48-hour exposure duration was appropriate for a screening immobilization test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	Three concentrations (nominal 55-1200 mg/L) and a control group were included in the screening water-only test. This is fewer concentrations than typical for an immobilization test, but adequate for the purpose of selecting doses for the preliminary sediment test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below the limit of solubility of 4590 mg/L.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test organisms for the screening test was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	For the screening test there were 4 replicates of 10 midges per treatment level and control (40 midges total per treatment level) which is more than the minimum typically required for acute immobilization tests.
Domain 5: Outcome Assessment				

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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)			
Exposure Route, Media, Path:	Aquatic (freshwater); Water; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Immobilization			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	Low	Details of test conditions were not reported for the screening test.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not reported for the screening test.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the outcome assessment were not reported for the screening test.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	The report did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups for the screening test.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical analysis was not conducted for the screening test but sufficient data were provided to conduct an independent statistical analysis.
	Metric 22:	Reporting of Data	High	Data were presented for each treatment group and the control.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.
Additional Comments:	This evaluation is for the immobilization outcome from the water-only screening test.			

Overall Quality Determination**Uninformative**

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.	
Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.	
Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.	
Metric 5:	Negative Control Response	High	Percent emergence in controls was 77% which is greater than the guideline required minimum of 70%.	
Metric 6:	Randomized Allocation	Medium	Report stated that test organisms were impartially distributed. Test vessels were randomly positioned in a water bath.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Measurements obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.	
Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.	
Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.	
Metric 14:	Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.	
Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.	
Domain 5: Outcome Assessment				
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
	Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.
	Metric 17:	Outcome Assessment Methodology	High	The protocol for determining emergence was well described in Section 2.10.2 and complied with OECD 233.
	Metric 18:	Consistency of Outcome Assessment	High	Details of emergence observations reported in Section 2.10.2 and appeared consistent among treatment groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22:	Reporting of Data	High	Data well-described in text, tables, and figures.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.
Additional Comments:	This data evaluation is for the percent emergence outcome for the F1 generation.			

Overall Quality Determination**High**

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Development/Growth			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.	
Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.	
Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.	
Metric 5:	Negative Control Response	High	Control male, female, and combined developmental rates are shown in Table 10 and are adequate.	
Metric 6:	Randomized Allocation	Medium	Report stated that test organisms were impartially distributed. Test vessels were randomly positioned in a water bath.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Measurements obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.	
Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.	
Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.	
Metric 14:	Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.	
Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.	
Domain 5: Outcome Assessment				
Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.	
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10706027

Domain	Metric	Rating	Comments
	Metric 17: Outcome Assessment Methodology	High	The protocol for determining developmental rate was well described in Section 2.13.1 and complied with OECD 233.
	Metric 18: Consistency of Outcome Assessment	High	Development rate was assessed consistently among treatment groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20: Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22: Reporting of Data	High	Data were well-described in text, tables, and figures.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.

Additional Comments: This data evaluation is for the developmental rate outcome for the parent generation (M/F/Combined).

Overall Quality Determination

High

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Development/Growth			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.
	Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.
	Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.
	Metric 5:	Negative Control Response	High	Control male, female, and combined developmental rates are shown in Table 19 and are adequate.
	Metric 6:	Randomized Allocation	Medium	Report stated that test organisms were impartially distributed. Test vessels were randomly positioned in a water bath.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Measurements obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.
	Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10706027

Domain	Metric	Rating	Comments
	Metric 17: Outcome Assessment Methodology	High	The protocol for determining developmental rate was well described in Section 2.13.1 and complied with OECD 233.
	Metric 18: Consistency of Outcome Assessment	High	Development rate was assessed consistently among treatment groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20: Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22: Reporting of Data	High	Data were well-described in text, tables, and figures.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.

Additional Comments: This data evaluation is for the developmental rate outcome for the F1 Generation (M/F/Combined).

Overall Quality Determination

High

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.	
Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.	
Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.	
Metric 5:	Negative Control Response	High	Percent female of the emerged control adults was 42% which is within the guideline range of 40 to 60%.	
Metric 6:	Randomized Allocation	Medium	Report stated that test organisms impartially distributed. Test vessels were randomly positioned in a water bath.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Measurements were obtained at several timepoints during the study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.	
Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.	
Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.	
Metric 14:	Acclimatization and Pretreatment Conditions	Medium	The pretreatment conditions and methods were conducted according to OECD 233.	
Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.	
Domain 5: Outcome Assessment				
Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.	

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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	The protocol for distinguishing male from female midges was described in Section 2.10.2.
	Metric 18:	Consistency of Outcome Assessment	High	Sex ratio was assessed consistently among treatment groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22:	Reporting of Data	High	Data well-described in text, tables, and figures.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.
Additional Comments:	This data evaluation is for the male/female sex ratio outcome (% females in emerged midges) for the parent generation.			
Overall Quality Determination		High		

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.	
Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.	
Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.	
Domain 2: Test Design				
Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.	
Metric 5:	Negative Control Response	High	Percent female of the emerged control adults was 46% which is within the guideline range of 40 to 60%.	
Metric 6:	Randomized Allocation	Medium	Report stated that test organisms impartially distributed. Vessels were randomly positioned in water bath.	
Domain 3: Exposure Characterization				
Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.	
Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.	
Metric 9:	Measurement of Test Substance Concentration	High	Measurements obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.	
Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.	
Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.	
Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.	
Domain 4: Test Organism				
Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.	
Metric 14:	Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.	
Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.	
Domain 5: Outcome Assessment				
Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.	
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
	Metric 17:	Outcome Assessment Methodology	High	The protocol for distinguishing male from female midges was described in Section 2.10.2.
	Metric 18:	Consistency of Outcome Assessment	High	Sex ratio was assessed consistently among treatment groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22:	Reporting of Data	High	Data were well-described in text, tables, and figures.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.
Additional Comments:	This evaluation is for the male/female sex ratio (% females in emerged midges) outcome for the F1 generation.			
Overall Quality Determination		High		

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1: Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.	
	Metric 2: Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.	
	Metric 3: Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.	
Domain 2: Test Design				
	Metric 4: Negative Controls	High	An appropriate control group was included in the experiment.	
	Metric 5: Negative Control Response	High	Biological response of the control group was reported and appeared adequate.	
	Metric 6: Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.	
Domain 3: Exposure Characterization				
	Metric 7: Experimental System/Test Media Preparation	Low	The report indicated that the details of test media preparation reported in Section 2.8.1 applied to both the preliminary exposure and the definitive exposure. Concentrations of the test substance were not measured during the preliminary study.	
	Metric 8: Consistency of Exposure Administration	High	The report indicated that the details of exposure administration reported in Section 2.8.1 applied to both the preliminary exposure and the definitive exposure. Exposures appear to have been administered consistently across study groups.	
	Metric 9: Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported and it is expected that actual concentrations differed significantly from nominal concentrations.	
	Metric 10: Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.	
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	Five concentrations (nominal 8.1-1000 mg/kg) and a control group were included in the preliminary test. The spacing was appropriate for a range-finding test.	
	Metric 12: Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.	
Domain 4: Test Organism				
	Metric 13: Test Organism Characteristics	Low	The source of the test organisms for the preliminary test was not reported.	
	Metric 14: Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups.	
	Metric 15: Number of Organisms and Replicates per Group	Medium	There were 2 replicate breeding cages per treatment level.	
Domain 5: Outcome Assessment				
	Metric 16: Adequacy of Test Conditions	Low	Details of test conditions were not reported for the preliminary test.	
	Metric 17: Outcome Assessment Methodology	Low	The outcome assessment methodology was not reported for the preliminary test.	
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10706027

Domain	Metric	Rating	Comments
	Metric 18: Consistency of Outcome Assessment	Low	Details regarding the execution of the outcome assessment were not reported for the preliminary test.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The report did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups for the preliminary test.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical analysis was not conducted for the preliminary test but sufficient data were provided to conduct an independent statistical analysis.
	Metric 22: Reporting of Data	High	Data were presented for each treatment group and the control.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.

Additional Comments: This evaluation is for the reproductive end points measured in parent and F 1 generation in the preliminary range-finding test.

Overall Quality Determination

Medium

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Development/Growth			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.
	Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.
	Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.
	Metric 5:	Negative Control Response	Medium	Biological response of the control group was reported for the preliminary test. Mean percent emergence and mean development rates (male/female/combined) in the parent generation appeared to be lower than guideline minimums for definitive tests. The control response in the F1 generation appeared adequate.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The report indicated that the details of test media preparation reported in Section 2.8.1 applied to both the preliminary exposure and the definitive exposure. Concentrations of the test substance were not measured during the preliminary study.
	Metric 8:	Consistency of Exposure Administration	High	The report indicated that the details of exposure administration reported in Section 2.8.1 applied to both the preliminary exposure and the definitive exposure. Exposures appear to have been administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured or measurements were not reported and it is expected that actual concentrations differed significantly from nominal concentrations.
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 8.1-1000 mg/kg) and a control group were included in the preliminary test. The spacing was appropriate for a range-finding test.
	Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test organisms for the preliminary test was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pre-treatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	For the preliminary test there were 6 replicate beakers (20 midges) per treatment level and control for the parent generation (120 midges total per treatment level), and 4 replicate beakers (20 midges) per treatment level and control for the F1 generation (80 midges total per treatment level).
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10706027

Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	Low	Details of test conditions were not reported for the preliminary test.
	Metric 17: Outcome Assessment Methodology	Low	The outcome assessment methodology was not reported for the preliminary test.
	Metric 18: Consistency of Outcome Assessment	Low	Details regarding the execution of the outcome assessment were not reported for the preliminary test.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	Low	The report did not provide enough information to allow a comparison of environmental conditions or other non-treatment-related factors across study groups for the preliminary test.
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistical analysis was not conducted for the preliminary test but sufficient data were provided to conduct an independent statistical analysis.
	Metric 22: Reporting of Data	High	Data were presented for each treatment group and the control.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.
Additional Comments: This evaluation is for the developmental/growth endpoints measured in parent and F 1 generation in the preliminary range-finding test.			

Overall Quality Determination**Medium**

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.		
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days		
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae		
Health Outcome:	Mortality		
Chemical:	1,1,2-Trichloroethane-Parent compound		
HERO ID:	10706027		
Domain	Metric	Rating	Comments
Domain 1: Test Substance			
	Metric 1: Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.
	Metric 2: Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.
	Metric 3: Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.
Domain 2: Test Design			
	Metric 4: Negative Controls	High	An appropriate control group was included in the experiment.
	Metric 5: Negative Control Response	High	Percent emergence in controls was 81% which is greater than the guideline required minimum of 70%.
	Metric 6: Randomized Allocation	Medium	Report stated that test organisms were impartially distributed. Test vessels were randomly positioned in a water bath.
Domain 3: Exposure Characterization			
	Metric 7: Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.
	Metric 8: Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.
	Metric 9: Measurement of Test Substance Concentration	High	Measurements were obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.
	Metric 10: Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.
	Metric 11: Number of Exposure Groups/Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.
	Metric 12: Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.
Domain 4: Test Organism			
	Metric 13: Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.
	Metric 14: Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.
	Metric 15: Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	High	Test conditions were adequately described.

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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Larvae			
Health Outcome:	Mortality			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
	Metric 17: Outcome Assessment Methodology	High	The protocol for determining emergence was well described in Section 2.10.2 and complied with OECD 233.	
	Metric 18: Consistency of Outcome Assessment	High	Details of emergence observations were reported in Section 2.10.2 and appeared consistent among treatment groups.	
Domain 6: Confounding / Variable Control				
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.	
	Metric 20: Outcomes Unrelated to Exposure	Medium	There was no information in the study to suggest differences among groups in animal attrition or health outcomes unrelated to exposure (e.g., infection) that could influence the outcome assessment.	
Domain 7: Data Presentation and Analysis				
	Metric 21: Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.	
	Metric 22: Reporting of Data	High	Data were well-described in text, tables, and figures.	
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.	
Additional Comments:	This data evaluation is for the percent emergence outcome for the parent generation.			
Overall Quality Determination		High		

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.			
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days			
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)			
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult			
Health Outcome:	Reproductive/Teratogenic			
Chemical:	1,1,2-Trichloroethane-Parent compound			
HERO ID:	10706027			
Domain	Metric	Rating	Comments	
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Name and CASRN of test substance stated in Section 2.2.2.
	Metric 2:	Test Substance Source	High	Source stated as Sigma Aldrich. Certificates of Analysis provided in Appendix 2.
	Metric 3:	Test Substance Purity	High	Purity stated as 96.7% for test substance and 98.2% for reference substance.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An appropriate control group was included in the experiment.
	Metric 5:	Negative Control Response	High	Fecundity and fertility of the control group is shown in Table 11 and all outcomes met guideline criteria.
	Metric 6:	Randomized Allocation	Medium	Report stated that test organisms were impartially distributed. Test vessels were randomly positioned in a water bath.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental methods were well described in Section 2.8. Measures were taken to minimize loss of the volatile test substance. Substantial loss still occurred over the total course of the study. The test concentrations were measured at multiple time points.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were reported in Section 2.8 and exposures were administered consistently across study groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Measurements obtained at several timepoints during study for sediment, pore water, and overlying water. Time-weighted mean presented in addition to individual measurements.
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was conducted according to OECD 233.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Five concentrations (nominal 63-1000 mg/kg) and a control group were included in the study.
	Metric 12:	Testing at or Below Solubility Limit	N/A	The test material was incorporated into sediment.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The source and age of organisms were reported. <i>Chironomus riparius</i> is a standard test species.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The pretreatment conditions and methods were conducted according to OECD 233.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 8 replicate beakers (20 midges per beaker) per treatment level for a total of 160 midges per treatment level.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Test conditions were adequately described.
	Metric 17:	Outcome Assessment Methodology	High	The protocol for determining fecundity and fertility was described in Section 2.10.3.
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Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (<i>Chironomus riparius</i>) life-cycle toxicity test using spiked sediment, following OECD Guideline 233.		
Duration:	Overall Duration: > 21 days; Exposure Duration: > 21 days		
Exposure Route, Media, Path:	Aquatic (freshwater); Sediment; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)		
Taxa, Species, Age:	Invertebrate; Arthropods; <i>Chironomus riparius</i> ; Adult		
Health Outcome:	Reproductive/Teratogenic		
Chemical:	1,1,2-Trichloroethane-Parent compound		
HERO ID:	10706027		

Domain	Metric	Rating	Comments
	Metric 18: Consistency of Outcome Assessment	High	Fecundity and fertility were assessed consistently among treatment groups.
Domain 6: Confounding / Variable Control			
	Metric 19: Confounding Variables in Test Design and Procedures	High	There were no reported differences among the study groups in environmental conditions or other factors that could influence the outcome assessment.
	Metric 20: Outcomes Unrelated to Exposure	High	Details regarding test organism attrition and outcomes unrelated to exposure were reported for each study group. There were no differences among groups that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	Statistics were adequately described in Section 2.13 and Appendix 9.
	Metric 22: Reporting of Data	High	Data were well-described in text, tables, and figures.
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported.

Additional Comments: This evaluation is for the number of egg masses per female (fecundity) and the number of fertile egg masses (fertility) for the parent generation.

Overall Quality Determination **High**