United States
Environmental Protection Agency

May 2026
Office of Chemical Safety and
Pollution Prevention

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

Systematic Review Support Document for the Draft Risk Evaluation

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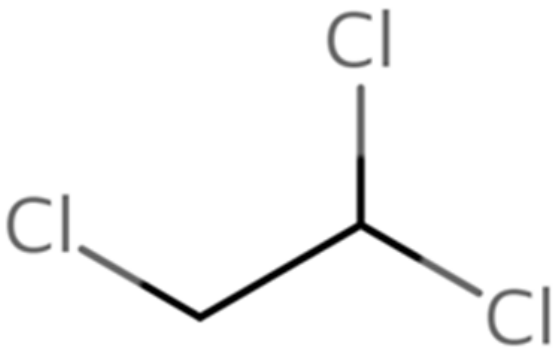

May 2026

This supplemental file contains information regarding the data quality evaluation results relevant to the characterization of environmental hazard for the *Draft Human Health and Environmental Hazard Assessment for 1,1,2-Trichloroethane*. 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 1,1,2-Trichloroethane*.

Different data quality evaluation forms were used for different organism as described in the PECO statement in Appendix H.5.12 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. The study details and respective endpoints are organized by first the relevant habitat (*i.e.*, aquatic, terrestrial), then taxa categories (*e.g.*, vertebrates, invertebrates, vegetation) followed by taxonomic groups (*e.g.*, fish, amphibian, mammalian, avian, worms, vascular plants), individual species, and finally exposure duration and health outcome (*e.g.*, mortality) categories relevant to the endpoint being evaluated.

Table of Contents

HERO ID	Reference	Page
	1,1,2-Trichloroethane	
	Habitat: Aquatic (freshwater)	
	Taxa: Vertebrates	
	Fathead minnow (Pimephales promelas)	
4259619	Walbridge, C. T., Fiandt, J. T., Phipps, G. L., Holcombe, G. W. (1983). Acute toxicity of ten chlorinated aliphatic hydrocarbons to the fathead minnow (Pimephales promelas). Archives of Environmental Contamination and Toxicology 12(6):661-666.	**11**
	Jordanella floridae	
95201	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.	**17**
95201	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.	**21**
95201	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.	**23**
	Lepomis macrochirus	
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.	**27**
18050	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish (Lepomis macrochirus). :379-392.	**29**
	Osteichthyes	
660810	Freitag, D., Ballhorn, L., Behechti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259.	**31**
	Pimephales promelas	
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.	**33**
2799652	OTS, (1987). Acute fish toxicity of five chlorinated solvents.	**35**

7494661 Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II. **47**

Poecilia reticulata

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **53**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **62**

3684127 Könemann, H. (1981). Quantitative structure-activity relationships in fish toxicity studies. Part 1: Relationship for 50 industrial pollutants. Toxicology 19(3):209-221. **71**

Rainbow Trout (Oncorhynchus Mykiss)

4840530 K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113. **73**

Taxa: Invertebrates

Artemia salina

1023390 Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78. **93**

Brachionus calyciflorus

1023390 Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78. **95**

Chironomus riparius

5352369 Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997. **97**

10706027 Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (Chironomus riparius) life-cycle toxicity test using spiked sediment, following OECD Guideline 233. **105**

10706027 Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (Chironomus riparius) life-cycle toxicity test using spiked sediment, following OECD Guideline 233. **107**

Daphnia magna

10609980 3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea). **125**

1486051 Abernethy, S., Bobra, A. M., Shiu, W. Y., Wells, P. G., Mackay, D. (1986). Acute lethal toxicity of hydrocarbons and chlorinated hydrocarbons to two planktonic crustaceans: The key role of organism-water partitioning. Aquatic Toxicology 8(3):163-174. **127**

5352364 Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134. **129**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **133**

1023390 Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78. **139**

660810 Freitag, D., Ballhorn, L., Behechti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259. **141**

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. **143**

3634174 Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684. **145**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **149**

10609980 3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea). **152**

5352364 Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134. **156**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **160**

3634174 Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684. **166**

Dreissena polymorpha

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **170**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **173**

Lymnaea stagnalis

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **176**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **179**

Mytilus edulis

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **185**

Streptocephalus proboscideus

1023390 Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78. **188**

Taxa: Plants (Non-vascular)

Chlamydomonas reinhardtii

661061 Brack, W., Rottler, H. (1994). Toxicity testing of highly volatile chemicals with green algae: A new assay. Environmental Science and Pollution Research 1(4):223-228. **190**

Chlorella pyrenoidosa

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **194**

Pseudokirchneriella subcapitata

4141189 Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to Pseudokirchneriella subcapitata. Environmental Toxicology and Chemistry 25(11):2920-2926. **197**

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. **201**

Scendesmus subspicatus

10214703 Behechti, 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. **203**

Scenedesmus subspicata

660810 Freitag, D., Ballhorn, L., Behechti, A., Fischer, K., Thumm, W. (1994). Structural configuration and toxicity of chlorinated alkanes. Chemosphere 28(2):253-259. **205**

Habitat: Aquatic (marine)

Taxa: Vertebrates

Gobius minutus

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **207**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **210**

Limanda limanda

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. **213**

Pleuronectes platessa

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **215**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **230**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **239**

Poecilia reticulata

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **245**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **251**

Taxa: Invertebrates

Artemia salina

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **257**

200570 Sanchez-Fortun, S., Sanz, F., Santa-Maria, A., Ros, J. M., Vicente, De, M. L., Encinas, M. T., Vinagre, E., Barahona, M. V. (1997). Acute sensitivity of three age classes of Artemia salina larvae to seven chlorinated solvents. Bulletin of Environmental Contamination and Toxicology 59(3):445-451. **263**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **265**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **271**

Chaetogammarus marinus

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **277**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **283**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **289**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **292**

Crangon crangon

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **295**

5442093 Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612. **298**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **300**

Crepidula fornicata

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **303**

Elminus modestus

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. **306**

Ophryotrocha diadema

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **308**

Ophryotrocha labronica

5442093 Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612. **311**

5442093 Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612. **315**

Palaemonetes varians

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **321**

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **324**

Temora longicornis

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **327**

Taxa: Plants (Non-vascular)

Chlamydomonas sp.

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **330**

Chlorella ovalis

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **333**

Dunaliella sp.

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **336**

Phaeodactylum tricornutum

5352365 Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554. **339**

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. **342**

Habitat: Aquatic (brackish)

Taxa: Vertebrates

Cyprinodon variegatus

18110 Heitmuller, P. T., Hollister, T. A., Parrish, P. R. (1981). Acute toxicity of 54 industrial chemicals to sheepshead minnows (Cyprinodon variegatus). Bulletin of Environmental Contamination and Toxicology 27(5):596-604. **344**

Habitat: Terrestrial

Taxa: Vertebrates

Gallus domesticus

94468 Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119. **346**

Quail-genus and species not specified

2780694 3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information. **352**

Rattus norvegicus

2780694 3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information. **354**

Taxa: Invertebrates

Eisenia fetida

3625226 Neuhauser, E. F., Loehr, R. C., Malecki, M. R., Milligan, D. L., Durkin, P. R. (1985). The toxicity of selected organic chemicals to the earthworm Eisenia fetida. Journal of Environmental Quality 14(3):383-388. **356**

Tyrophagus longior, Acarus siro, Glycyphagus destructor

3676086 Bowley, C. R., Bell, C. H. (1981). The toxicity of twelve fumigants to three species of mites infesting grain. Journal of Stored Products Research 17(2):83-87. **358**

Taxa: Plants (Vascular)

Nicotiana tabacum L.

1022795 Schubert, U., Wisanowsky, L., Kull, U. (1995). Determination of phytotoxicity of several volatile organic compounds by investigating the germination pattern of tobacco pollen. Journal of Plant Physiology 145(4):514-518. **360**

Populus deltoides x nigra

42313 Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (Populus deltoides x nigra DN34). Environmental Toxicology and Chemistry 20(2):389-393. **363**

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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 1,1,2-trichloroethane.
	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 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 Q| 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 reported 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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 (Pimephales promelas), 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 degrees 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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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-Karber 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-Karber 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: None

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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-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 1,1,2-trichloroethane.
	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 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 Q| 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 reported 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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-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 (Pimephales promelas), 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 degrees 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 (Pimephales promelas). 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; *Fathead minnow (Pimephales promelas)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-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	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 identify 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.

Overall Quality Determination Uninformative

Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified by name, CASRN and structure were not included.
	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, both clean and solvent controls
	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
	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 measurements were not reported, they did report the range of percentages that nominals differed from measured values
	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	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	High	The test organisms were reaered in dilution water
	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

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Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Minor uncertainties or limitations were identified regarding organism environmental conditions (pH of test vessels)
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome
	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
	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	Authors used trimmed Spearman-Karber
	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: Flow through test

Overall Quality Determination High

Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified by name, CASRN and structure were not included.
	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, both clean and solvent controls
	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
	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 measurements were not reported
	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	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	High	The test organisms were reaered in dilution water
	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 uncertainties or limitations were identified regarding organism environmental conditions (pH of test vessels)

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Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome
	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
	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	Authors used trimmed Spearman-Karber
	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: Static renewal test

Overall Quality Determination High

Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified by name, CASRN and structure were not included.
	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	The biological response of the negative control groups was reported
	Metric 6:	Randomized Allocation	Medium	Researchers stated fish were randomly added to testing apparatus.
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 measurements were reported
	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 reared in dilution water
	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 uncertainties or limitations were identified regarding organism environmental conditions (pH of test vessels)

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Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome
	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
	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: percent hatch and survival

Overall Quality Determination High

Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified by name, CASRN and structure were not included.
	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	The biological response of the negative control groups was reported
	Metric 6:	Randomized Allocation	Medium	Researchers stated fish were randomly added to testing apparatus.
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 measurements were reported
	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 reared in dilution water
	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 uncertainties or limitations were identified regarding organism environmental conditions (pH of test vessels)

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Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome
	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
	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: Used fry for this test

Overall Quality Determination High

Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified by name, CASRN and structure were not included.
	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	The biological response of the negative control groups was reported
	Metric 6:	Randomized Allocation	Medium	Researchers stated fish were randomly added to testing apparatus.
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 measurements were reported
	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 reared in dilution water
	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 uncertainties or limitations were identified regarding organism environmental conditions (pH of test vessels)
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology reported the intended outcome

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Study Citation:	Smith, A. D., Bharath, A., Mallard, C., Orr, D., Smith, K., Sutton, J. A., Vukmanich, J., Mccarty, L. S., Ozburn, G. W. (1991). The acute and chronic toxicity of ten chlorinated organic compounds to the American flagfish (Jordanella floridae). Archives of Environmental Contamination and Toxicology 20(1):94-102.
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; *Jordanella floridae*; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	95201

Domain	Metric		Rating	Comments
	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
	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: Used fry for this test

Overall Quality Determination High

Study Citation:	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.
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; *Lepomis macrochirus*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 (Lepomis macrochirus). 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; *Lepomis macrochirus*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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:	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish (Lepomis macrochirus). :379-392.
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; *Lepomis macrochirus*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	ADME (biotransformation)
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	18050; Linked HERO ID(s): 7508, 18050, 18064, 18110, 628983, 3617735

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Test form of the chemical was identified and location of the C 14 label was given.
	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	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
	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 regularly along with the tissue concentrations as well as before the exposures began.
	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	N/A	Only one sublethal concentration of each chemical were used to observe for bioconcentration.
	Metric 12:	Testing at or Below Solubility Limit	Low	Reporting omissions prevented determination of whether exposure concentrations exceeded the water solubility limit, however, solvents were used to aid in dissolution.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Age of test organisms was not reported, but this is likely to have little impact on the test results.
	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:	Barrows, M. E., Petrocelli, S. R., Macek, K. J., Carroll, J. J. (1980). Bioconcentration and elimination of selected water pollutants by bluegill sunfish (Lepomis macrochirus). :379-392.
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; *Lepomis macrochirus*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	ADME (biotransformation)
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	18050; 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	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	N/A	This study was to determine bioconcentration factors, and thus statistical analysis was not necessary.
	Metric 22:	Reporting of Data	Medium	Most data exposure related finding were reported, but the control group and 2 metals were not included in the charts, but discussed in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes, or unexpected outcomes

Additional Comments: None

Overall Quality Determination Medium

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:	Vertebrate; Fish; *Osteichthyes*; No further classification other than "fish" was given in this article; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	660810

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 source was not 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 chromatrography.
	Metric 10:	Exposure Duration and Frequency	Medium	Fish LC50s were measured for 48hrs not 96hrs.
	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 12 fish were used in each concentration.
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:	Vertebrate; Fish; *Osteichthyes*; No further classification other than "fish" was given in this article; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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	LC50s were reported, but for 48hr 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	Low	Statistical analysis was performed but all that was reported was the use of probability paper to determine LC50s.
	Metric 22:	Reporting of Data	Low	LC50s 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:	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.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 obtained from Aldrich Chemical Company, but the identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The chemical purity was reported as 98%.
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 the 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 60), but they were 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 (Pimephales promelas): 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; *Pimephales promelas*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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	The LC50 value was 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 1,1,2-Trichloroethane was 81.6 mg/l, and all associated data was provided on pages 59-60/346. Confidence limits were not calculated.

Overall Quality Determination High

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane. which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Solvent and water controls were used.
	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 cited a reference for methods but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was not measured.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations measurements were not measured.
	Metric 10:	Exposure Duration and Frequency	Low	The duration of exposure was reported and appropriate for the study type but not the frequency of exposure.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Ethanol was used as the solvent in the static test. The solvent concentration used was according to the guidelines in the cited reference for methods (HERO ID 58129). However, the biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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.

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome.
	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	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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were reasonably described. Finney's probit analysis was conducted to estimate LC50 values and confidence intervals.
	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 source of test organisms, exposure concentrations (nominal or measured), spacing of exposure levels, number of test organisms used, number of replicates and control response were not reported. Only LC 50 values along with confidence intervals were reported.

Overall Quality Determination Uninformative

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Solvent and water controls were used.
	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 cited a reference for methods but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was not measured.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	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 but not the frequency of exposure.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Uninformative	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Ethanol was used as the solvent in the static test. The solvent concentration used was according to the guidelines in the cited reference for methods. However, the biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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				

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome.
	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	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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were reasonably described. Finney's probit analysis was conducted to estimate LC50 values and confidence intervals.
	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 source of test organisms, exposure concentrations (nominal or measured), spacing of exposure levels, number of test organisms used, number of replicates, and control response were not reported. Only LC 50 values along with confidence intervals were reported.

Overall Quality Determination Uninformative

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Both solvent and water controls were used.
	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 cited a reference for methods but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was measured but not reported. No details were given regarding the preparation and addition of inhibitor substances for the inhibited flow through test.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations measurements were not reported.
	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	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Methanol was used as the solvent in flow through test. The concentration used exceeded the amount used in the cited reference for methods. The biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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.

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	Medium	Details of the outcome assessment protocol were not clearly reported but outcomes appeared to be assessed consistently 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 (e.g., infection) 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 for determination of EC 10, 50 and 90 values.
	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 source of test organisms, exposure concentrations (nominal or measured), spacing of exposure levels and control response were not reported. 96 hr LC 50 values along with confidence intervals were reported in Table 2 and 24, 48, 72 and 96 hrs LC 10, LC 50 and LC 90 values along with confidence intervals were reported in Table 3.

Overall Quality Determination Uninformative

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and 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	Both solvent and water controls were used.
	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 cited a reference for methods (HERO ID 58129) but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was measured but not reported.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations measurements were not reported.
	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	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Methanol was used as the solvent in flow through test. The concentration used exceeded the amount used in the cited reference for methods. The biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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				

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	Medium	Details of the outcome assessment protocol were not clearly 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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The statistical methods to determine EC 10, 50 and 90 values were not described.
	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 source of test organisms, exposure concentrations (nominal or measured), spacing of exposure levels and control response were not reported. Only EC 10, EC 50 and EC 90 values along with confidence intervals were reported.

Overall Quality Determination Uninformative

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Both solvent and water controls were used.
	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 cited a reference for methods but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was measured but not reported.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations measurements were not reported.
	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	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Methanol was used as the solvent in flow through test. The concentration used exceeded the amount used in the cited reference for methods. The biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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				

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome.
	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	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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were reasonably described. Probit analysis was conducted to estimate LC50 values and confidence intervals.
	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 source of test organisms, exposure concentrations nominal or measured), spacing of exposure levels and control response were not reported. 96 hr LC 50 values along with confidence intervals were reported in Table 2 and 72 and 96 hrs LC 10, LC 50 and LC 90 values along with confidence intervals were reported in Table 3.

Overall Quality Determination Uninformative

Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, which is an isomer of 1,1,2 - trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	It was only reported that the chemicals tested were 'DOW production samples' and the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Low	Purity and grade of test substance were not reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Both solvent and water controls were used.
	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 cited a reference for methods but provided only limited details on the measures taken to appropriately prepare test concentrations and minimize loss of substances during exposure in the paper. Concentration of the test substance was measured but not reported. No details were given regarding the preparation and addition of inhibitor substances for the inhibited flow through test.
	Metric 8:	Consistency of Exposure Administration	Low	Details of exposure administration were not reported.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations measurements were not reported.
	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	The number of exposure groups and spacing of exposure levels were not reported.
	Metric 12:	Testing at or Below Solubility Limit	Low	Methanol was used as the solvent in flow through test. The concentration used exceeded the amount used in the cited reference for methods. The biological response of the solvent control was not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source and characteristics (size, age, etc.) of test organisms were 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.

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Study Citation:	OTS, (1987). Acute fish toxicity of five chlorinated solvents.
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; *Pimephales promelas*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2799652

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Housing, environmental conditions and biomass loading were not sufficiently reported to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome.
	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	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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were reasonably described. Probit analysis was conducted to estimate LC50 values and confidence intervals.
	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 source of test organisms, exposure concentrations nominal or measured), spacing of exposure levels and control response were not reported. Only LC 50 values along with confidence intervals were reported.

Overall Quality Determination Uninformative

Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The chemical was identified as 1,1,2-Trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was purchased from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified.
	Metric 3:	Test Substance Purity	High	The test substance had a purity in the range of 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	A negative control was used in the study.
	Metric 5:	Negative Control Response	High	The negative control results were reported and adequate.
	Metric 6:	Randomized Allocation	Medium	The study indicated that the fish were randomly allocated
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The study experimental system and methods of test media preparation were described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	The study reported using a proportional dilution system to consistently administer test concentrations (5 dilutions and control).
	Metric 9:	Measurement of Test Substance Concentration	High	Test substances were measured via gas chromatography, which was tested with known test concentrations and demonstrated to have a recovery of >95%.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure for the flow-through study was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The study reported five exposures and a control group with a dilution factor of 0.6 between test concentrations and a range of two orders of magnitude. The number of exposure groups and spacing of exposure levels were adequate to address the purpose of the study . The exposure concentrations were given in table 7 (page 41/111).
	Metric 12:	Testing at or Below Solubility Limit	High	Based on the biological effects observed in the results, the concentration tested below the water solubility limit of the test substance.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test species were adequately described and appropriate for the study-either laboratory-reared or obtained from National Fish Hatchery in Lake Mills, Wisconsin. This metric was rated based on the information in the linked reference (Benoit et al. 1982) .
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The test species was adequately and consistently acclimatized for across treatment and control groups. This metric was rated based on the information in the linked reference (Benoit et al. 1982) .

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Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The study used 4 replicates of 15 fishes for the five exposure concentrations and control. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	The fish housing and test conditions were adequate to maintain fish health. Biomass loading for P. promelas was not indicated, but the study followed U.S. EPA (1975) methods.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest and the assessment methodology was sensitive and appropriate for the outcomes(s) of interest. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups (e.g., at the same time after initial exposure) using the same protocol in all study groups. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences in environmental test conditions that could influence 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	Statistical methods (including any calculations or data transformations) were clearly described. One way ANOVA and Dunnett's test were conducted. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group (Table 7; page 41/111).
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported in the study.

Additional Comments: This is USEPA study report with data on acute and chronic toxicity test on a number of organisms. Majority of the data in this report has been published elsewhere (HERO ID 18052, 3634174, 4259619) . This evaluation form is for the survival outcome of fathead minnow chronic test for 1,1,2-trichloroethane. Many metrics in this form were rated based on the information in the linked reference (Benoit et al. 1982; HERO ID 18052), which is a peer-reviewed publication of chronic toxicity data for solvents (except 1,1,2 - trichloroethane) conducted on fathead minnows.

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Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The chemical was identified as 1,1,2-Trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was purchased from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified.
	Metric 3:	Test Substance Purity	High	The test substance had a purity in the range of 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	A negative control was used in the study.
	Metric 5:	Negative Control Response	High	The negative control results were reported and adequate.
	Metric 6:	Randomized Allocation	Medium	The study indicated that the fish were randomly allocated
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The study experimental system and methods of test media preparation were described in adequate detail.
	Metric 8:	Consistency of Exposure Administration	High	The study reported using a proportional dilution system to consistently administer test concentrations (5 dilutions and control).
	Metric 9:	Measurement of Test Substance Concentration	High	Test substances were measured via gas chromatography, which was tested with known test concentrations and demonstrated to have a recovery of >95%.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure for the flow-through study was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	The study reported five exposures and a control group with a dilution factor of 0.6 between test concentrations and a range of two orders of magnitude. The number of exposure groups and spacing of exposure levels were adequate to address the purpose of the study . The exposure concentrations were given in table 7 (page 41/111).
	Metric 12:	Testing at or Below Solubility Limit	High	Based on the biological effects observed in the results, the concentration tested below the water solubility limit of the test substance.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test species were adequately described and appropriate for the study-either laboratory-reared or obtained from National Fish Hatchery in Lake Mills, Wisconsin. This metric was rated based on the information in the linked reference (Benoit et al. 1982) .
	Metric 14:	Acclimatization and Pretreatment Conditions	High	The test species was adequately and consistently acclimatized for across treatment and control groups. This metric was rated based on the information in the linked reference (Benoit et al. 1982) .

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Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The study used 4 replicates of 15 fishes for the five exposure concentrations and control. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	The fish housing and test conditions were adequate to maintain fish health. Biomass loading for P. promelas was not indicated, but the study followed U.S. EPA (1975) methods.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest and the assessment methodology was sensitive and appropriate for the outcomes(s) of interest. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups (e.g., at the same time after initial exposure) using the same protocol in all study groups. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	There were no reported differences in environmental test conditions that could influence 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	Statistical methods (including any calculations or data transformations) were clearly described. One way ANOVA and Dunnett's test were conducted. This metric was rated based on the information in the linked reference (Benoit et al. 1982).
	Metric 22:	Reporting of Data	High	Data for exposure-related findings were presented for each treatment and control group (Table 7; page 41/111).
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported in the study.

Additional Comments: This is USEPA study report with data on acute and chronic toxicity test on a number of organisms. Majority of the data in this report has been published elsewhere (HERO ID 18052, 3634174, 4259619) . This evaluation form is for the growth outcome of fathead minnow chronic test for 1,1,2- trichloroethane. Many metrics in this form were rated based on the information in the linked reference (Benoit et al. 1982; HERO ID 18052), which is a peer-reviewed publication of chronic toxicity data for solvents (except 1,1,2 - trichloroethane) conducted on fathead minnows.

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Study Citation:	Ahmad, N., Benoit, D., Brooke, L., Call, D., Carlson, A., DeFoe, D., Huot, J., Morairity, A., Richter, J. (1984). Aquatic toxicity tests to characterise the hazard of volatile organic chemicals in water: A toxicity data summary – parts I and II.
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; *Pimephales promelas*; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	7494661; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric	Rating	Comments
Overall Quality Determination		**High**	

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Taxa, Species, Age:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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Taxa, Species, Age:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, "Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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Taxa, Species, Age:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

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; *Poecilia reticulata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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; *Poecilia reticulata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 1,1,2-Trichloroethane, and its isomers 1,1,1-Trichloroethane and Trichloroethane.

Overall Quality Determination Uninformative

Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	No information was provided regarding the source of the chemicals used in the study, and the test substance identity was not analytically verified.
	Metric 3:	Test Substance Purity	Low	purity and grade were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Water was reported as a control. Two concentrations of a solvent control (methanol) were also used. The study authors indicated that, "Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish."
	Metric 5:	Negative Control Response	High	Water control response was nominal
	Metric 6:	Randomized Allocation	Medium	Not entirely clear but the study authors reported "For 1 h priorto exposure and for 1 h during exposure, the average amplitudeand frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	"The tank was filled in steps of approximately 20 L by diverting part of the biosensor unit supply water to it. Water entered the tank through a fixed stainless steel tube extended to the bottom. This allowed the tank to fill without disturbing the surface of the water. After each addition of stock solution, the water was manually mixed by a smooth repeated up-down movement with a stainless steel plunger of approximately 10-cm diameter. Care was given not to extend the plunger beyond the surface of the water while mixing to minimize any volatilization of the contaminant. When filled to capacity, the stainless steel tank was immediately sealed with a stainless steel lid, allowing only a minimal air layer above the water in the tank."

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Taxa, Species, Age:	Vertebrate; Fish; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 8:	Consistency of Exposure Administration	High	”At the start of an experiment, the water normally flowing through the upper set of the four test cells in the biosensor unit (250 to 300 ml/min for each cell) was diverted with a three-way valve to flow into the bottom of the stainless steel tank. The in-flowing water entered the bottom of the tank and displaced an equal volume of the test solution through an outlet at the top of the tank. The test water was routed to the biosensor unit via Teflon@ tubing. At the slow filling/exchange rate of 1 .O to 1.2 L/min for the tank, any vertical mixing of the incoming clean water with the overlying solution was expected to be minimal. This was confirmed with a separate test using 500 pg/L of 2,4-dichlorophenol, where the observed effects lasted for very close to 1 h and disappeared quickly thereafter.”
	Metric 9:	Measurement of Test Substance Concentration	Medium	Not reported, however care was taken to minimalize loss to volatilization – ”After each addition of stock solution, the waterwas manually mixed by a smooth repeated up-downmovement with a stainless steel plunger of approximately10-cm diameter. Care was given not to extend the plunger beyondthe surface of the water while mixing to minimize anyvolatilization of the contaminant. When filled to capacity,the stainless steel tank was immediately sealed with a stainlesssteel lid, allowing only a minimal air layer above the waterin the tank.”
	Metric 10:	Exposure Duration and Frequency	High	”Fish were normally placed into the biosensor cells at least 12 h before beginning an experiment. The fish displayed little signs of stress and usually settled down after transfer from the aquarium in less than 1 h, beginning to ventilate and swim in a regular and steady fashion. Review of the electrical signals recorded together with video recordings of the same tests, taken under low-level red light, confirmed the interpretation of most of the signals from the strip charts, such as coughing, positioning perpendicular to the water current, turning, rapid and hectic movement about the cell, and facing downstream. In most experiments where a stress response was noted, the fish when exposed to clean water calmed down and returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	N/A	The objective was to evaluate fish response thresholds.
	Metric 12:	Testing at or Below Solubility Limit	Low	No information was reported regarding the solubility of the chemical
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The only information that was reported was, ”Rainbow trout fingerlings of approximately 4 cm in length (weight 2 to 4 g) were purchased from a local southern Ontario fish hatchery and were held in an aquarium for several days prior to testing.”

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 14:	Acclimatization and Pretreatment Conditions	High	”Fish were normally placed into the biosensor cells at least12 h before beginning an experiment. The fish displayed littlesigns of stress and usually settled down after transfer fromthe aquarium in less than 1 h, beginning to ventilate and swimin a regular and steady fashion. Review of the electrical signalsrecorded together with video recordings of the sametests, taken under low-level red light, confirmed the interpretationof most of the signals from the strip charts, such ascoughing, positioning perpendicular to the water current,turning, rapid and hectic movement about the cell, and facingdownstream. In most experiments where a stress responsewas noted, the fish when exposed to clean water calmed downand returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 15:	Number of Organisms and Replicates per Group	Low	Not entirely clear how many fish were studied per treatment. Each fish served as its own control. The study authors reported, ”The testing unit used was the Bio-Sensor@, model 6008A, electronic biomonitoring unit (Biomonitoring Inc., Blacksburg, VA), which contains a total of eight fish-monitoring chambers or cells with a volume of 250 ml water each. Of these, four cells were used for routine water quality monitoring of the water authority’s raw watersupply, and three cells were used simultaneously for the experiments (one cell was inoperative). Each cell contained onefish that was individually monitored by electronic capture ofthe ventilation amplitude and frequency, averaged over 1-minperiods, by recording visual observations, by video recording,and by strip-chart recording of the computer-enhancedelectrical signals from the cell electrodes.”
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Testing conditions were adequate.
	Metric 17:	Outcome Assessment Methodology	High	Behavior responses were determined.
	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 identified
	Metric 20:	Outcomes Unrelated to Exposure	Medium	none identified by study authors
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	”Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure.”

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 22:	Reporting of Data	High	Data were reported at one test concentration.
	Metric 23:	Explanation of Unexpected Outcomes	High	None identified

Additional Comments: None

Overall Quality Determination High

Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	Low	No information was provided regarding the source of the chemicals used in the study, and the test substance identity was not analytically verified.
	Metric 3:	Test Substance Purity	Low	purity and grade were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Methanol, carrier solvent, was used as a control (results shown in figure 1 – "Recorded response traces of four representative I-min timeslices for the exposure of rainbow trout to 4,000 pg/L methanol. Therhythmic ventilation was sustained for 60 min, indicating no responseto the methanol."
	Metric 5:	Negative Control Response	High	Normal ventilation sustained in response to methanol exposure – "Figure 1 shows examples of four 1-min time slices of a1-h test run with a methanol (solvent carrier) control at4,000 pg/L. There was no response by the fish; both ventilatoryfrequency and amplitude remained normal over the 1-hperiod"
	Metric 6:	Randomized Allocation	Medium	Not entirely clear but the study authors reported "For 1 h priorto exposure and for 1 h during exposure, the average amplitudeand frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	"The tank was filled in steps of approximately 20 L by diverting part of the biosensor unit supply water to it. Water entered the tank through a fixed stainless steel tube extended to the bottom. This allowed the tank to fill without disturbing the surface of the water. After each addition of stock solution, the water was manually mixed by a smooth repeated up-down movement with a stainless steel plunger of approximately 10-cm diameter. Care was given not to extend the plunger beyond the surface of the water while mixing to minimize any volatilization of the contaminant. When filled to capacity, the stainless steel tank was immediately sealed with a stainless steel lid, allowing only a minimal air layer above the water in the tank."

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 8:	Consistency of Exposure Administration	High	"At the start of an experiment, the water normally flowing through the upper set of the four test cells in the biosensor unit (250 to 300 ml/min for each cell) was diverted with a three-way valve to flow into the bottom of the stainless steel tank. The in-flowing water entered the bottom of the tank and displaced an equal volume of the test solution through an outlet at the top of the tank. The test water was routed to the biosensor unit via Teflon@ tubing. At the slow filling/exchange rate of 1 .O to 1.2 L/min for the tank, any vertical mixing of the incoming clean water with the overlying solution was expected to be minimal. This was confirmed with a separate test using 500 pg/L of 2,4-dichlorophenol, where the observed effects lasted for very close to 1 h and disappeared quickly thereafter."
	Metric 9:	Measurement of Test Substance Concentration	Medium	Not reported, however care was taken to minimalize loss to volatilization – "After each addition of stock solution, the waterwas manually mixed by a smooth repeated up-downmovement with a stainless steel plunger of approximately10-cm diameter. Care was given not to extend the plunger beyondthe surface of the water while mixing to minimize anyvolatilization of the contaminant. When filled to capacity,the stainless steel tank was immediately sealed with a stainlesssteel lid, allowing only a minimal air layer above the waterin the tank."
	Metric 10:	Exposure Duration and Frequency	High	"Fish were normally placed into the biosensor cells at least 12 h before beginning an experiment. The fish displayed little signs of stress and usually settled down after transfer from the aquarium in less than 1 h, beginning to ventilate and swim in a regular and steady fashion. Review of the electrical signals recorded together with video recordings of the same tests, taken under low-level red light, confirmed the interpretation of most of the signals from the strip charts, such as coughing, positioning perpendicular to the water current, turning, rapid and hectic movement about the cell, and facing downstream. In most experiments where a stress response was noted, the fish when exposed to clean water calmed down and returned to a normal behavior within 2 h or less afterending the exposure."
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	N/A	The objective was to evaluate fish response thresholds after low-dose exposure; only one dose was tested.
	Metric 12:	Testing at or Below Solubility Limit	Low	No information was reported regarding the solubility of the chemical
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The only information that was reported was, "Rainbow trout fingerlings of approximately 4 cm in length (weight 2 to 4 g) were purchased from a local southern Ontario fish hatchery and were held in an aquarium for several days prior to testing."

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 14:	Acclimatization and Pretreatment Conditions	High	"Fish were normally placed into the biosensor cells at least12 h before beginning an experiment. The fish displayed littlesigns of stress and usually settled down after transfer fromthe aquarium in less than 1 h, beginning to ventilate and swimin a regular and steady fashion. Review of the electrical signalsrecorded together with video recordings of the sametests, taken under low-level red light, confirmed the interpretationof most of the signals from the strip charts, such ascoughing, positioning perpendicular to the water current,turning, rapid and hectic movement about the cell, and facingdownstream. In most experiments where a stress responsewas noted, the fish when exposed to clean water calmed downand returned to a normal behavior within 2 h or less afterending the exposure."
	Metric 15:	Number of Organisms and Replicates per Group	Low	Not entirely clear how many fish were studied per treatment. Each fish served as its own control. The study authors reported, "The testing unit used was the Bio-Sensor@, model 6008A, electronic biomonitoring unit (Biomonitoring Inc., Blacksburg, VA), which contains a total of eight fish-monitoring chambers or cells with a volume of 250 ml water each. Of these, four cells were used for routine water quality monitoring of the water authority's raw watersupply, and three cells were used simultaneously for the experiments (one cell was inoperative). Each cell contained onefish that was individually monitored by electronic capture ofthe ventilation amplitude and frequency, averaged over 1-minperiods, by recording visual observations, by video recording,and by strip-chart recording of the computer-enhancedelectrical signals from the cell electrodes."
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Testing conditions were adequate.
	Metric 17:	Outcome Assessment Methodology	Medium	Ventilation response is described graphically in figures, and numerically in tables. Coughing response is only described qualitatively in text.
	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 identified
	Metric 20:	Outcomes Unrelated to Exposure	Medium	No differences unrelated to exposure were identified by study authors
Domain 7: Data Presentation and Analysis				

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 21:	Statistical Methods	High	"Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
	Metric 22:	Reporting of Data	Medium	Data were reported at one test concentration, only for the ventilation results. Increased coughing was reported in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes were identified

Additional Comments: None

Overall Quality Determination High

Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	Low	No information was provided regarding the source of the chemicals used in the study, and the test substance identity was not analytically verified.
	Metric 3:	Test Substance Purity	Low	purity and grade were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Water was reported as a control. Two concentrations of a solvent control (methanol) were also used. The study authors indicated that, "Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish."
	Metric 5:	Negative Control Response	High	Water control response was nominal
	Metric 6:	Randomized Allocation	Medium	Not entirely clear but the study authors reported "For 1 h priorto exposure and for 1 h during exposure, the average amplitudeand frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	"The tank was filled in steps of approximately 20 L by diverting part of the biosensor unit supply water to it. Water entered the tank through a fixed stainless steel tube extended to the bottom. This allowed the tank to fill without disturbing the surface of the water. After each addition of stock solution, the water was manually mixed by a smooth repeated up-down movement with a stainless steel plunger of approximately 10-cm diameter. Care was given not to extend the plunger beyond the surface of the water while mixing to minimize any volatilization of the contaminant. When filled to capacity, the stainless steel tank was immediately sealed with a stainless steel lid, allowing only a minimal air layer above the water in the tank."

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Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 8:	Consistency of Exposure Administration	High	”At the start of an experiment, the water normally flowing through the upper set of the four test cells in the biosensor unit (250 to 300 ml/min for each cell) was diverted with a three-way valve to flow into the bottom of the stainless steel tank. The in-flowing water entered the bottom of the tank and displaced an equal volume of the test solution through an outlet at the top of the tank. The test water was routed to the biosensor unit via Teflon@ tubing. At the slow filling/exchange rate of 1 .O to 1.2 L/min for the tank, any vertical mixing of the incoming clean water with the overlying solution was expected to be minimal. This was confirmed with a separate test using 500 pg/L of 2,4-dichlorophenol, where the observed effects lasted for very close to 1 h and disappeared quickly thereafter.”
	Metric 9:	Measurement of Test Substance Concentration	Medium	Not reported, however care was taken to minimalize loss to volatilization – ”After each addition of stock solution, the waterwas manually mixed by a smooth repeated up-downmovement with a stainless steel plunger of approximately10-cm diameter. Care was given not to extend the plunger beyondthe surface of the water while mixing to minimize anyvolatilization of the contaminant. When filled to capacity,the stainless steel tank was immediately sealed with a stainlesssteel lid, allowing only a minimal air layer above the waterin the tank.”
	Metric 10:	Exposure Duration and Frequency	High	”Fish were normally placed into the biosensor cells at least 12 h before beginning an experiment. The fish displayed little signs of stress and usually settled down after transfer from the aquarium in less than 1 h, beginning to ventilate and swim in a regular and steady fashion. Review of the electrical signals recorded together with video recordings of the same tests, taken under low-level red light, confirmed the interpretation of most of the signals from the strip charts, such as coughing, positioning perpendicular to the water current, turning, rapid and hectic movement about the cell, and facing downstream. In most experiments where a stress response was noted, the fish when exposed to clean water calmed down and returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	N/A	The objective was to evaluate fish response thresholds.
	Metric 12:	Testing at or Below Solubility Limit	Low	No information was reported regarding the solubility of the chemical
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The only information that was reported was, ”Rainbow trout fingerlings of approximately 4 cm in length (weight 2 to 4 g) were purchased from a local southern Ontario fish hatchery and were held in an aquarium for several days prior to testing.”

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Taxa, Species, Age:	Vertebrate; Fish; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 14:	Acclimatization and Pretreatment Conditions	High	”Fish were normally placed into the biosensor cells at least12 h before beginning an experiment. The fish displayed littlesigns of stress and usually settled down after transfer fromthe aquarium in less than 1 h, beginning to ventilate and swimin a regular and steady fashion. Review of the electrical signalsrecorded together with video recordings of the sametests, taken under low-level red light, confirmed the interpretationof most of the signals from the strip charts, such ascoughing, positioning perpendicular to the water current,turning, rapid and hectic movement about the cell, and facingdownstream. In most experiments where a stress responsewas noted, the fish when exposed to clean water calmed downand returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 15:	Number of Organisms and Replicates per Group	Low	Not entirely clear how many fish were studied per treatment. Each fish served as its own control. The study authors reported, ”The testing unit used was the Bio-Sensor@, model 6008A, electronic biomonitoring unit (Biomonitoring Inc., Blacksburg, VA), which contains a total of eight fish-monitoring chambers or cells with a volume of 250 ml water each. Of these, four cells were used for routine water quality monitoring of the water authority’s raw watersupply, and three cells were used simultaneously for the experiments (one cell was inoperative). Each cell contained onefish that was individually monitored by electronic capture ofthe ventilation amplitude and frequency, averaged over 1-minperiods, by recording visual observations, by video recording,and by strip-chart recording of the computer-enhancedelectrical signals from the cell electrodes.”
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Testing conditions were adequate.
	Metric 17:	Outcome Assessment Methodology	High	Behavior responses were determined.
	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 identified
	Metric 20:	Outcomes Unrelated to Exposure	Medium	none identified by study authors
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	”Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure.”

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Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 22:	Reporting of Data	High	Data were reported at one test concentration.
	Metric 23:	Explanation of Unexpected Outcomes	High	None identified

Additional Comments: None

Overall Quality Determination High

Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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Taxa, Species, Age:	Vertebrate; Fish; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as 1,1,2-Trichloroethane.
	Metric 2:	Test Substance Source	Low	No information was provided regarding the source of the chemicals used in the study, and the test substance identity was not analytically verified.
	Metric 3:	Test Substance Purity	Low	purity and grade were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Water was reported as a control. Two concentrations of a solvent control (methanol) were also used. The study authors indicated that, "Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish."
	Metric 5:	Negative Control Response	High	Water control response was nominal
	Metric 6:	Randomized Allocation	Medium	Not entirely clear but the study authors reported "For 1 h priorto exposure and for 1 h during exposure, the average amplitudeand frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	"The tank was filled in steps of approximately 20 L by diverting part of the biosensor unit supply water to it. Water entered the tank through a fixed stainless steel tube extended to the bottom. This allowed the tank to fill without disturbing the surface of the water. After each addition of stock solution, the water was manually mixed by a smooth repeated up-down movement with a stainless steel plunger of approximately 10-cm diameter. Care was given not to extend the plunger beyond the surface of the water while mixing to minimize any volatilization of the contaminant. When filled to capacity, the stainless steel tank was immediately sealed with a stainless steel lid, allowing only a minimal air layer above the water in the tank."

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Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 8:	Consistency of Exposure Administration	High	”At the start of an experiment, the water normally flowing through the upper set of the four test cells in the biosensor unit (250 to 300 ml/min for each cell) was diverted with a three-way valve to flow into the bottom of the stainless steel tank. The in-flowing water entered the bottom of the tank and displaced an equal volume of the test solution through an outlet at the top of the tank. The test water was routed to the biosensor unit via Teflon@ tubing. At the slow filling/exchange rate of 1 .O to 1.2 L/min for the tank, any vertical mixing of the incoming clean water with the overlying solution was expected to be minimal. This was confirmed with a separate test using 500 pg/L of 2,4-dichlorophenol, where the observed effects lasted for very close to 1 h and disappeared quickly thereafter.”
	Metric 9:	Measurement of Test Substance Concentration	Medium	Not reported, however care was taken to minimalize loss to volatilization – ”After each addition of stock solution, the waterwas manually mixed by a smooth repeated up-downmovement with a stainless steel plunger of approximately10-cm diameter. Care was given not to extend the plunger beyondthe surface of the water while mixing to minimize anyvolatilization of the contaminant. When filled to capacity,the stainless steel tank was immediately sealed with a stainlesssteel lid, allowing only a minimal air layer above the waterin the tank.”
	Metric 10:	Exposure Duration and Frequency	High	”Fish were normally placed into the biosensor cells at least 12 h before beginning an experiment. The fish displayed little signs of stress and usually settled down after transfer from the aquarium in less than 1 h, beginning to ventilate and swim in a regular and steady fashion. Review of the electrical signals recorded together with video recordings of the same tests, taken under low-level red light, confirmed the interpretation of most of the signals from the strip charts, such as coughing, positioning perpendicular to the water current, turning, rapid and hectic movement about the cell, and facing downstream. In most experiments where a stress response was noted, the fish when exposed to clean water calmed down and returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	N/A	The objective was to evaluate fish response thresholds.
	Metric 12:	Testing at or Below Solubility Limit	Low	No information was reported regarding the solubility of the chemical
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The only information that was reported was, ”Rainbow trout fingerlings of approximately 4 cm in length (weight 2 to 4 g) were purchased from a local southern Ontario fish hatchery and were held in an aquarium for several days prior to testing.”

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 14:	Acclimatization and Pretreatment Conditions	High	”Fish were normally placed into the biosensor cells at least12 h before beginning an experiment. The fish displayed littlesigns of stress and usually settled down after transfer fromthe aquarium in less than 1 h, beginning to ventilate and swimin a regular and steady fashion. Review of the electrical signalsrecorded together with video recordings of the sametests, taken under low-level red light, confirmed the interpretationof most of the signals from the strip charts, such ascoughing, positioning perpendicular to the water current,turning, rapid and hectic movement about the cell, and facingdownstream. In most experiments where a stress responsewas noted, the fish when exposed to clean water calmed downand returned to a normal behavior within 2 h or less afterending the exposure.”
	Metric 15:	Number of Organisms and Replicates per Group	Low	Not entirely clear how many fish were studied per treatment. Each fish served as its own control. The study authors reported, ”The testing unit used was the Bio-Sensor@, model 6008A, electronic biomonitoring unit (Biomonitoring Inc., Blacksburg, VA), which contains a total of eight fish-monitoring chambers or cells with a volume of 250 ml water each. Of these, four cells were used for routine water quality monitoring of the water authority’s raw watersupply, and three cells were used simultaneously for the experiments (one cell was inoperative). Each cell contained onefish that was individually monitored by electronic capture ofthe ventilation amplitude and frequency, averaged over 1-minperiods, by recording visual observations, by video recording,and by strip-chart recording of the computer-enhancedelectrical signals from the cell electrodes.”
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Testing conditions were adequate.
	Metric 17:	Outcome Assessment Methodology	High	Behavior responses were determined
	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 identified
	Metric 20:	Outcomes Unrelated to Exposure	Medium	none identified by study authors
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	”Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure.”

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 22:	Reporting of Data	High	Data were reported at one test concentration
	Metric 23:	Explanation of Unexpected Outcomes	High	None identified

Additional Comments: None

Overall Quality Determination High

Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	No information was provided regarding the source of the chemicals used in the study, and the test substance identity was not analytically verified.
	Metric 3:	Test Substance Purity	Low	purity and grade were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Methanol, carrier solvent, was used as a control (results shown in figure 1 – "Recorded response traces of four representative I-min timeslices for the exposure of rainbow trout to 4,000 pg/L methanol. Therhythmic ventilation was sustained for 60 min, indicating no responseto the methanol."
	Metric 5:	Negative Control Response	High	Normal ventilation sustained in response to methanol exposure – "Figure 1 shows examples of four 1-min time slices of a1-h test run with a methanol (solvent carrier) control at4,000 pg/L. There was no response by the fish; both ventilatoryfrequency and amplitude remained normal over the 1-hperiod"
	Metric 6:	Randomized Allocation	Medium	Not entirely clear but the study authors reported "For 1 h priorto exposure and for 1 h during exposure, the average amplitudeand frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	"The tank was filled in steps of approximately 20 L by diverting part of the biosensor unit supply water to it. Water entered the tank through a fixed stainless steel tube extended to the bottom. This allowed the tank to fill without disturbing the surface of the water. After each addition of stock solution, the water was manually mixed by a smooth repeated up-down movement with a stainless steel plunger of approximately 10-cm diameter. Care was given not to extend the plunger beyond the surface of the water while mixing to minimize any volatilization of the contaminant. When filled to capacity, the stainless steel tank was immediately sealed with a stainless steel lid, allowing only a minimal air layer above the water in the tank."

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 8:	Consistency of Exposure Administration	High	"At the start of an experiment, the water normally flowing through the upper set of the four test cells in the biosensor unit (250 to 300 ml/min for each cell) was diverted with a three-way valve to flow into the bottom of the stainless steel tank. The in-flowing water entered the bottom of the tank and displaced an equal volume of the test solution through an outlet at the top of the tank. The test water was routed to the biosensor unit via Teflon@ tubing. At the slow filling/exchange rate of 1 .O to 1.2 L/min for the tank, any vertical mixing of the incoming clean water with the overlying solution was expected to be minimal. This was confirmed with a separate test using 500 pg/L of 2,4-dichlorophenol, where the observed effects lasted for very close to 1 h and disappeared quickly thereafter."
	Metric 9:	Measurement of Test Substance Concentration	Medium	Not reported, however care was taken to minimalize loss to volatilization – "After each addition of stock solution, the waterwas manually mixed by a smooth repeated up-downmovement with a stainless steel plunger of approximately10-cm diameter. Care was given not to extend the plunger beyondthe surface of the water while mixing to minimize anyvolatilization of the contaminant. When filled to capacity,the stainless steel tank was immediately sealed with a stainlesssteel lid, allowing only a minimal air layer above the waterin the tank."
	Metric 10:	Exposure Duration and Frequency	High	"Fish were normally placed into the biosensor cells at least 12 h before beginning an experiment. The fish displayed little signs of stress and usually settled down after transfer from the aquarium in less than 1 h, beginning to ventilate and swim in a regular and steady fashion. Review of the electrical signals recorded together with video recordings of the same tests, taken under low-level red light, confirmed the interpretation of most of the signals from the strip charts, such as coughing, positioning perpendicular to the water current, turning, rapid and hectic movement about the cell, and facing downstream. In most experiments where a stress response was noted, the fish when exposed to clean water calmed down and returned to a normal behavior within 2 h or less afterending the exposure."
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	N/A	The objective was to evaluate fish response thresholds after low-dose exposure; only one dose was tested.
	Metric 12:	Testing at or Below Solubility Limit	Low	No information was reported regarding the solubility of the chemical
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The only information that was reported was, "Rainbow trout fingerlings of approximately 4 cm in length (weight 2 to 4 g) were purchased from a local southern Ontario fish hatchery and were held in an aquarium for several days prior to testing."

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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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 14:	Acclimatization and Pretreatment Conditions	High	"Fish were normally placed into the biosensor cells at least12 h before beginning an experiment. The fish displayed littlesigns of stress and usually settled down after transfer fromthe aquarium in less than 1 h, beginning to ventilate and swimin a regular and steady fashion. Review of the electrical signalsrecorded together with video recordings of the sametests, taken under low-level red light, confirmed the interpretationof most of the signals from the strip charts, such ascoughing, positioning perpendicular to the water current,turning, rapid and hectic movement about the cell, and facingdownstream. In most experiments where a stress responsewas noted, the fish when exposed to clean water calmed downand returned to a normal behavior within 2 h or less afterending the exposure."
	Metric 15:	Number of Organisms and Replicates per Group	Low	Not entirely clear how many fish were studied per treatment. Each fish served as its own control. The study authors reported, "The testing unit used was the Bio-Sensor@, model 6008A, electronic biomonitoring unit (Biomonitoring Inc., Blacksburg, VA), which contains a total of eight fish-monitoring chambers or cells with a volume of 250 ml water each. Of these, four cells were used for routine water quality monitoring of the water authority's raw watersupply, and three cells were used simultaneously for the experiments (one cell was inoperative). Each cell contained onefish that was individually monitored by electronic capture ofthe ventilation amplitude and frequency, averaged over 1-minperiods, by recording visual observations, by video recording,and by strip-chart recording of the computer-enhancedelectrical signals from the cell electrodes."
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Testing conditions were adequate.
	Metric 17:	Outcome Assessment Methodology	Medium	Ventilation response is described graphically in figures, and numerically in tables. Coughing response is only described qualitatively in text.
	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 identified
	Metric 20:	Outcomes Unrelated to Exposure	Medium	No differences unrelated to exposure were identified by study authors
Domain 7: Data Presentation and Analysis				

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Study Citation:	K, Kaiser, L. E., Mckinnon, M. B., Stendahl, D. H., Pett, W. B. (1995). Response threshold levels of selected organic compounds for rainbow trout (Oncorhynchus mykiss). Environmental Toxicology and Chemistry 14(12):2107-2113.
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; *Rainbow Trout (Oncorhynchus Mykiss)*; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	4840530

Domain	Metric		Rating	Comments
	Metric 21:	Statistical Methods	High	"Because of the natural biological variance between fish, each of the test fish was used as its own control. For 1 h prior to exposure and for 1 h during exposure, the average amplitude and frequency, measured as an average in 1-min intervals, were calculated for the three test fish. A two-tail t test, 01 = 0.05, was used to evaluate any difference in the means of frequency and amplitude prior to and during exposure."
	Metric 22:	Reporting of Data	Medium	Data were reported at one test concentration, only for the ventilation results. Increased coughing was reported in the text.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes were identified

Additional Comments: None

Overall Quality Determination High

Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Artemia salina*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	The source was not reported.
	Metric 3:	Test Substance Purity	Medium	Some uncertainty over purity, used the term ”usually greater than 97% ”
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Use of a control is inferred when calculating an LCXX value but controls not explicitly stated in cited reference (Calleja et al 1992).
	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	Test conditions described in cited methodology (Calleja et al 1992) but no further details provided in primary reference.
	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	Low	Exposure concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	Medium	Minor limitations in duration of exposure were identified.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	Cited methodology (Calleja et al 1992) does not provide details on number of exposure groups or 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 test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	Cited methodology (Calleja et al 1992) provides some details on acclimatization prior to exposure.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Four replicate tests performed.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Cited methodology (Calleja et al 1992) provides some details on environmental conditions. Biomass loading not described in cited methods or by authors.

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Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Artemia salina*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

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 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.
	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	24 hour EC(50) values were calculated according to Trimmed Spearman-Karber method.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group. LC50 value is shown in Table 1.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.

Additional Comments: used Toxkits

Overall Quality Determination Low

Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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); *Brachionus calyciflorus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	The source was not reported.
	Metric 3:	Test Substance Purity	Medium	Some uncertainty over purity, used the term ”usually greater than 97% ”
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Use of a control is stated in cited methodology (Calleja et al 1992).
	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	Test conditions described in cited methodology (Calleja et al 1992) but no further details provided in primary reference.
	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	Low	Exposure concentrations were not measured
	Metric 10:	Exposure Duration and Frequency	Medium	Minor limitations in duration of exposure were identified.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	Cited methodology (Calleja et al 1992) does not provide details on number of exposure groups or 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 test 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	Medium	Four replicate tests performed.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Cited methodology (Calleja et al 1992) provides some details on environmental conditions. Biomass loading not described in cited methods or by authors.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not clearly reported.

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Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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); *Brachionus calyciflorus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

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.
	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	24 hour EC(50) values were calculated according to Trimmed Spearman-Karber method.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group. LC50 value shown in Table 1.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability

Additional Comments: Used Toxkits

Overall Quality Determination Low

Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

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 source of the test substance was reported to be Fluka, but it was not reported if the test substance was analytically verified.
	Metric 3:	Test Substance Purity	High	The purity was reported to be >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported the use of a concurrent negative control.
	Metric 5:	Negative Control Response	High	Control response of 5% effects were reported in Table 4.
	Metric 6:	Randomized Allocation	Low	It was not reported how the test organisms were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Larvae were individually exposed in scintillation flasks. The test solution was not renewed for the duration of the study. The test substance was diluted in Dutch Standard Water, and lower test concentrations were prepared by diluting with more DSW.
	Metric 8:	Consistency of Exposure Administration	High	All larvae were individually exposed in scintillation flasks that were about 21mL for 48h. Environmental conditions were consistent across the test concentrations.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	It was reported that the test concentrations for the 1,1,2-trichloroethane study were based off of nominal concentrations due to "unreliable analytical results."
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was reported to be 48 hours, which is appropriate for an acute toxicity test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	There were five test concentrations, and the spacing was adequate to observe a dose response in mortality. However, all test concentrations reported 100% of the organisms experienced "effects" in terms of aberrant behavior or appearance, indicating test concentrations for these outcomes were too high.
	Metric 12:	Testing at or Below Solubility Limit	High	All test concentrations were below the water solubility limit of 1,1,2-trichloroethane.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The C. riparius were reported to be third instar larvae sourced from a colony reared at the facility.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Test conditions appeared to be similar to holding conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	It was reported there were 10 larvae per test concentration each in their own scintillation flask.

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Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	The test water was reported to be DSW, but the characteristics of the water were not reported. Sediment was from the Rhine oxbow lake. The larvae were kept at 12C with a 16L:8D photoperiod. They were fed Tetramin, but feeding regimen was not reported in detail.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome methodology was not clearly reported for the ”effects” response. It was reported that aberrant behavior, immobilization, and appearance were assessed. Aberrant appearance could include loss of red color. It was not reported how these outcomes were assessed or determined. This appears to be reported together with aberrant appearance under the outcome of ”effects” in Table 4.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol were limited for immobilization. These were reported under one outcome called ”effects.” Methods for determining immobilization were not reported. It was reported the organisms were assessed at 2, 4, 24, and 48 hours.
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	Low	NOLC and NOEC values were determine from the observed concertation-effect relationship. It was unclear how the NOEC value was derived.
	Metric 22:	Reporting of Data	Low	The LC50, NOCL, and NOEC values, along with the confidence intervals were reported in Table 2. Results for each individual test concentration in terms of percent effect were reported in Table 4. However, all behavioral and appearance effects were reported under one ”effects” outcome, so it is unclear what percentage of organisms were experiencing immobilization.
	Metric 23:	Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.

Additional Comments: This evaluation is for the immobilization outcome reported for C. riparius after exposure to 1,1,2-trichloroethane.

Overall Quality Determination — Uninformative

Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Skin & Connective Tissue
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

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 source of the test substance was reported to be Fluka, but it was not reported if the test substance was analytically verified.
	Metric 3:	Test Substance Purity	High	The purity was reported to be >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported the use of a concurrent negative control.
	Metric 5:	Negative Control Response	High	Control response of 5% effects were reported in Table 4.
	Metric 6:	Randomized Allocation	Low	It was not reported how the test organisms were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Larvae were individually exposed in scintillation flasks. The test solution was not renewed for the duration of the study. The test substance was diluted in Dutch Standard Water, and lower test concentrations were prepared by diluting with more DSW.
	Metric 8:	Consistency of Exposure Administration	High	All larvae were individually exposed in scintillation flasks that were about 21mL for 48h. Environmental conditions were consistent across the test concentrations.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	It was reported that the test concentrations for the 1,1,2-trichloroethane study were based off of nominal concentrations due to "unreliable analytical results."
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was reported to be 48 hours, which is appropriate for an acute toxicity test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	There were five test concentrations, and the spacing was adequate to observe a dose response in mortality. However, all test concentrations reported 100% of the organisms experienced "effects" in terms of aberrant behavior or appearance, indicating test concentrations for these outcomes were too high.
	Metric 12:	Testing at or Below Solubility Limit	High	All test concentrations were below the water solubility limit of 1,1,2-trichloroethane.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The C. riparius were reported to be third instar larvae sourced from a colony reared at the facility.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Test conditions appeared to be similar to holding conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	It was reported there were 10 larvae per test concentration each in their own scintillation flask.
Domain 5: Outcome Assessment				

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Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Skin & Connective Tissue
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	The test water was reported to be DSW, but the characteristics of the water were not reported. Sediment was from the Rhine oxbow lake. The larvae were kept at 12C with a 16L:8D photoperiod. They were fed Tetramin, but feeding regimen was not reported in detail.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome methodology was not clearly reported for the ”effects” response. It was reported that aberrant behavior and appearance were assessed. Aberrant appearance could include loss of red color. It was not reported how these outcomes were assessed or determined. This appears to be reported together with aberrant appearance under the outcome of ”effects” in Table 4.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol were limited for changes in appearance. These were reported under one outcome called ”effects.” Methods for determining changes in appearance were not reported. It was reported the organisms were assessed at 2, 4, 24, and 48 hours.
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	Low	NOLC and NOEC values were determine from the observed concertation-effect relationship. It was unclear how the NOEC value was derived.
	Metric 22:	Reporting of Data	Low	The LC50, NOCL, and NOEC values, along with the confidence intervals were reported in Table 2. Results for each individual test concentration in terms of percent effect were reported in Table 4. However, all behavioral and appearance effects were reported under one ”effects” outcome, so it is unclear what percentage of organisms were experiencing changes in appearance.
	Metric 23:	Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.

Additional Comments: This evaluation is for the mortality outcome reported for C. riparius after exposure to 1,1,2-trichloroethane. The LC50, NOLC, and NOEC values were reported in Table 2.

Overall Quality Determination Uninformative

Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

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 source of the test substance was reported to be Fluka, but it was not reported if the test substance was analytically verified.
	Metric 3:	Test Substance Purity	High	The purity was reported to be >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported the use of a concurrent negative control.
	Metric 5:	Negative Control Response	High	It was reported in the text that control mortality did not exceed 10%.
	Metric 6:	Randomized Allocation	Low	It was not reported how the test organism were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Larvae were individually exposed in scintillation flasks. The test solution was not renewed for the duration of the study. The test substance was diluted in Dutch Standard Water, and lower test concentrations were prepared by diluting with more DSW.
	Metric 8:	Consistency of Exposure Administration	High	All larvae were individually exposed in scintillation flasks that were about 21mL for 48h. Environmental conditions were consistent across the test concentrations.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	It was reported that the test concentrations for the 1,1,2-trichloroethane study were based off of nominal concentrations due to "unreliable analytical results."
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was reported to be 48 hours, which is appropriate for an acute toxicity test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	There were five test concentrations, and the spacing was adequate to observe a dose response in mortality, although there was a reversal from the 56 mg/L to the 100 mg/L dose level and there is a sharp decline from 80% mortality at 180 mg/L to 0% mortality at 100 mg/L.
	Metric 12:	Testing at or Below Solubility Limit	High	All test concentrations were below the water solubility limit of 1,1,2-trichloroethane.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The C. riparius were reported to be third instar larvae sourced from a colony reared at the facility.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Test conditions appeared to be similar to holding conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	It was reported that there were 10 larvae per test concentration each in their own scintillation flask.
Domain 5: Outcome Assessment				

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Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	The test water was reported to be DSW, but the characteristics of the water were not reported. Sediment was from the Rhine oxbow lake. The larvae were kept at 12C with a 16L:8D photoperiod. They were fed Tetramin, but feeding regimen was not reported in detail.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest-mortality in terms of an LC50, NOLC, and NOEC values.
	Metric 18:	Consistency of Outcome Assessment	High	Mortality was assessed by the use of binoculars at 2, 4, 24, and 48-hours.
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 were estimated using the Spearman-Karber method in cases where partial mortality occurred. NOLC and NOEC values were determine from observed concertation-effect relationship.
	Metric 22:	Reporting of Data	High	The LC50, NOCL, and NOEC values, along with the confidence intervals were reported in Table 2. Results for each individual test concentration in terms of percent mortality were reported in Table 4.
	Metric 23:	Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.

Additional Comments: This evaluation is for the mortality outcome reported for C. riparius after exposure to 1,1,2-trichloroethane. The LC50, NOCL, and NOEC values were reported in Table 2.

Overall Quality Determination — Uninformative

Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

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 source of the test substance was reported to be Fluka, but it was not reported if the test substance was analytically verified.
	Metric 3:	Test Substance Purity	High	The purity was reported to be >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported the use of a concurrent negative control.
	Metric 5:	Negative Control Response	High	Control response of 5% effects were reported in Table 4.
	Metric 6:	Randomized Allocation	Low	It was not reported how the test organism were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Larvae were individually exposed in scintillation flasks. The test solution was not renewed for the duration of the study. The test substance was diluted in Dutch Standard Water, and lower test concentrations were prepared by diluting with more DSW.
	Metric 8:	Consistency of Exposure Administration	High	All larvae were individually exposed in scintillation flasks that were about 21mL for 48h. Environmental conditions were consistent across the test concentrations.
	Metric 9:	Measurement of Test Substance Concentration	Uninformative	It was reported that the test concentrations for the 1,1,2-trichloroethane study were based off of nominal concentrations due to "unreliable analytical results."
	Metric 10:	Exposure Duration and Frequency	High	The exposure duration was reported to be 48 hours, which is appropriate for an acute toxicity test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	There were five test concentrations, and the spacing was adequate to observe a dose response in mortality. However, all test concentrations reported 100% of the organisms experienced "effects" in terms of aberrant behavior or appearance, indicating test concentrations for these outcomes were too high.
	Metric 12:	Testing at or Below Solubility Limit	High	All test concentrations were below the water solubility limit of 1,1,2-trichloroethane.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The C. riparius were reported to be third instar larvae sourced from a colony reared at the facility.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Test conditions appeared to be similar to holding conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	It was reported there were 10 larvae per test concentration each in their own scintillation flask.
Domain 5: Outcome Assessment				

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Study Citation:	Roghair, C. J., Buijze, A., Yedema, E., E.S., Hermens, M., J.L. (1994). A QSAR for base-line toxicity to the midge Chironomus riparius. Chemosphere 28(5):989-997.
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; *Chironomus riparius*; Meigen; Larvae
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352369

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	The test water was reported to be DSW, but the characteristics of the water were not reported. Sediment was from the Rhine oxbow lake. The larvae were kept at 12C with a 16L:8D photoperiod. They were fed Tetramin, but feeding regimen was not reported in detail.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome methodology was not clearly reported for the ”effects” response. It was reported that aberrant behavior and appearance were assessed. Aberrant behavior could include slow movement or no movement. It was not reported how these outcomes were assessed or determined. This appears to be reported together with aberrant appearance under the outcome of ”effects” in Table 4.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol were limited for behavioral changes. These were reported under one outcome called ”effects.” Methods for determining behavioral changes were not reported. It was reported the organisms were assessed at 2, 4, 24, and 48 hours.
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	Low	NOLC and NOEC values were determined from the observed concertation-effect relationship. It was unclear how the NOEC value was derived.
	Metric 22:	Reporting of Data	Low	The LC50, NOCL, and NOEC values, along with the confidence intervals were reported in Table 2. Results for each individual test concentration in terms of percent effect were reported in Table 4. However, all behavioral and appearance effects were reported under one ”effects” outcome, so it is unclear what percentage of organisms were experiencing behavioral changes.
	Metric 23:	Explanation of Unexpected Outcomes	High	Study authors did not report any unexpected outcomes.

Additional Comments: This evaluation is for the behavioral outcome reported for C. riparius after exposure to 1,1,2-trichloroethane. The LC50, NOCL, and NOEC values were reported in Table 2.

Overall Quality Determination — Uninformative

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (Chironomus riparius) 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; *Chironomus riparius*; 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 pretreatment 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; Adult
Health Outcome:	Reproductive/Teratogenic
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 fecundity and fertility was described in Section 2.10.3.
	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

Study Citation:	Smithers, (2023). 1,1,2-Trichloroethane - Sediment-water chironomid (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 pretreatment 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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 (Chironomus riparius) 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; *Chironomus riparius*; 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. Chironomus riparius 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 (Chironomus riparius) 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; *Chironomus riparius*; 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:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by CASRN. (79-00-5)
	Metric 2:	Test Substance Source	High	Supplier listed as Matheson, Coleman and Bell, Manuf. Chemist.
	Metric 3:	Test Substance Purity	High	Purity reported as 95%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Control treatment is indicated in the data tables.
	Metric 5:	Negative Control Response	High	The negative control response was reported as 0% and was adequate.
	Metric 6:	Randomized Allocation	Low	It was not reported how the daphnia were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Stock solution preparation described (sonication and mixing). Test concentrations were prepared by adding the appropriate amount of stock solution to the correct amount of dilution water. The test system was static. A screw cap was used to prevent volatilization on a 625 mL jar with 500 mL of test solution.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures appear to be consistently administered between treatment groups.
	Metric 9:	Measurement of Test Substance Concentration	Low	It was not reported if the test concentrations were measured at any point in the study.
	Metric 10:	Exposure Duration and Frequency	High	The study duration was reported to be 48h, which is typical of an acute toxicity study for daphnia.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	There were 6 exposure levels plus a control. The spacing was adequate to see a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	The test concentrations were below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The organisms were reported to be 24h old and were from the US EPA Laboratory in Duluth, MN.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	It was not reported if the organisms were acclimated to test conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 10 organisms per test chamber with 2 replicates for each treatment.
Domain 5: Outcome Assessment				

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Study Citation:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	Dissolved oxygen and pH reported. Not reported whether the daphnia were fed during the acute toxicity study.
	Metric 17:	Outcome Assessment Methodology	Medium	The outcome assessment methodology was limited in details–mortality.
	Metric 18:	Consistency of Outcome Assessment	High	Organisms assessed for mortalities every 24h.
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. There are no limitations that would result in a substantial impact 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 determined by probit analysis.
	Metric 22:	Reporting of Data	High	Raw data was provided for all treatment levels and controls. These results were adequate for the outcome of interest.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	The 95% confidence intervals were reported, but little information was provided on what determined an unexpected outcome.

Additional Comments: This was a data summary of the acute toxicity of 1,1,2 trichloroethane on Daphnia magna. Since this was an acute toxicity study, mortality was selected as the outcome of interest. Data sheets and a summary table were provided for this study.

Overall Quality Determination High

Study Citation:	Abernethy, S., Bobra, A. M., Shiu, W. Y., Wells, P. G., Mackay, D. (1986). Acute lethal toxicity of hydrocarbons and chlorinated hydrocarbons to two planktonic crustaceans: The key role of organism-water partitioning. Aquatic Toxicology 8(3):163-174.
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; *Daphnia magna*; Adult
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	1486051

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Chemical identified as 1,1,1-trichloroethane, an isomer of 1,1,2-Trichloroethane. No other information 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 reported as at least 97%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using a concurrent negative control
	Metric 5:	Negative Control Response	High	Control mortality was reported as always less than or equal to 10%.
	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	Test media preparation methods are briefly given in this paper and cites another reference, which was reviewed. Appropriate measures were taken to minimize loss of test substances.
	Metric 8:	Consistency of Exposure Administration	High	Details of exposure administration were given in the cited reference and appears to be consistent 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 and/or exposure frequency were reported and appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	It was reported that 5 exposure groups were tested but no information was provided on the spacing of exposure levels.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the solubility limit. It was reported that a saturated aqueous stock solution was prepared and then diluted to provide 5 exposure concentrations.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described. Culture conditions were described in Bobra et al. 1983. In the cited reference, it was reported that daphnia of similar size and age were used for the bioassays.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized

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Study Citation:	Abernethy, S., Bobra, A. M., Shiu, W. Y., Wells, P. G., Mackay, D. (1986). Acute lethal toxicity of hydrocarbons and chlorinated hydrocarbons to two planktonic crustaceans: The key role of organism-water partitioning. Aquatic Toxicology 8(3):163-174.
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; *Daphnia magna*; Adult
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	1486051

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The cited reference reported the use of 10 animals per vial and 2-4 replicates per test concentration.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions were not sufficiently reported to 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. Test organisms were assessed at 24 h and 48 h. Test organism was recorded as dead when no visible internal or external movements were observed under a Stereostar zoom microscope.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported and outcome assessment appears to be 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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical methods were adequately described. LC50values, slope factors, and 95% confidence limits were calculated by the graphical method of Litchfield and Wilcoxon (1948).
	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: Mortality data was not reported for the study groups and exposure concentrations were not measured during the study.

Overall Quality Determination — Medium

Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized, but the CASRN was not reported.
	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	Low	Purity and/or grade of test substance were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	A control is reported for chemicals other than the test chemical of interest, so it is unclear if there is a control used in the test with the test substance of interest.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	The authors did not report how organisms were allocated to study groups, only how many test organisms were used. N=25 organisms in almost all tests, N=10 organisms were used in a pilot experiment.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties. There is discussion of these parameters, though they aren't all reported explicitly.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures seem to be applied consistently across groups, but it is not explicitly stated. Also, control groups are not explicitly specified.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured by chemical analysis, but were not reported explicitly.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type and/or outcome(s) of interest (e.g., acute daphnid study of 48-hour duration). There is discussion of this duration.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The number of exposure groups are not specified. The spacing of exposure levels is not reported.
	Metric 12:	Testing at or Below Solubility Limit	Medium	No solvent was used for 1,1,2-TCE, so effects of biological responses were not observed for a solvent. The water solubility limit was not specified.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pretreatment conditions were the same for control and exposed groups.

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Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The number of test organisms is reported and the number of replicates is reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Food and temperature were also tested as variables in the study. Dissolved oxygen was also a variable. However, it appears as though those variables were held constant for the test substance tests.
	Metric 17:	Outcome Assessment Methodology	Medium	LC50s are the outcome, and it was discussed how dead daphnids were removed and counted. The outcome assessment methodology partially addressed or reported the intended outcomes(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	Medium	There was incomplete reporting of minor details of outcome assessment protocol execution.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	Temperature, feeding, and dissolved oxygen were variables that were discussed in this publication. However, for the mortality tests, it appears as though those additional variables were held constant.
	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	Low	LC50s are reported as endpoints, but descriptions on how they were calculated is not reported.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for the control groups. Results were not described in the text for 1,1,2-TCE.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals).

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized, but the CASRN was not reported.
	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	Low	Purity and/or grade of test substance were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	A control is reported for chemicals other than the test chemical of interest, so it is unclear if there is a control used in the test with the test substance of interest.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	The authors did not report how organisms were allocated to study groups, only how many test organisms were used. N=25 organisms in almost all tests, N=10 organisms were used in a pilot experiment.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties. There is discussion of these parameters, though they aren't all reported explicitly.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures seem to be applied consistently across groups, but it is not explicitly stated. Also, control groups are not explicitly specified.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured by chemical analysis, but were not reported explicitly.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type and/or outcome(s) of interest (e.g., acute daphnid study of 48-hour duration). There is discussion of this duration.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The number of exposure groups are not specified. The spacing of exposure levels is not reported.
	Metric 12:	Testing at or Below Solubility Limit	Medium	No solvent was used for 1,1,2-TCE, so effects of biological responses were not observed for a solvent. The water solubility limit was not specified.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pretreatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The number of test organisms is reported and the number of replicates is reported.

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Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Food and temperature were also tested as variables in the study. Dissolved oxygen was also a variable. However, it appears as though those variables were held constant for the test substance tests.
	Metric 17:	Outcome Assessment Methodology	Medium	LC50s are the outcome, and it was discussed how dead daphnids were removed and counted. The outcome assessment methodology partially addressed or reported the intended outcomes(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	Medium	There was incomplete reporting of minor details of outcome assessment protocol execution.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	Temperature, feeding, and dissolved oxygen were variables that were discussed in this publication. However, for the mortality tests, it appears as though those additional variables were held constant.
	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	Low	LC50s are reported as endpoints, but descriptions on how they were calculated is not reported.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for the control groups. Results were not described in the text for 1,1,2-TCE.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals).

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Daphnia magna*; Larvae
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Chemical identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	The source was not reported.
	Metric 3:	Test Substance Purity	Medium	Some uncertainty over purity, used the term ”usually greater than 97% ”
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	OECD 1984 citation includes use of 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	OECD 1984 describes much of the experimental set up for the Daphnia magna test but authors provide no further details on testing TPP in Daphnia magna.
	Metric 8:	Consistency of Exposure Administration	Medium	Authors cite OECD 1984 for conducting test in Daphnia magna but provide no further details.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	Medium	Minor limitations in duration of exposure were identified.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	Authors cite Daphnia magna test conducted according to OECD 1984 but provide no further details.
	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 test 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	Medium	Authors report conducting study according to OECD 1984 citation and state three replicate tests were conducted for Daphnia magna.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Authors report conducting Daphnia magna test according to OECD 1984 citation but provide no further details.

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Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Daphnia magna*; Larvae
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	Medium	Authors report conducting the study according to the OECD 1984 citation but provide no further details.
	Metric 18:	Consistency of Outcome Assessment	Medium	Authors report conducting the study according to OECD 1984 citation but provide no further details.
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	24 hour EC(50) values were calculated according to Trimmed Spearman-Karber method.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group. EC50 value is reported in Table 1.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.

Additional Comments: None

Overall Quality Determination Low

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; *Daphnia magna*; Juvenile
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	660810

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 source was not 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 chromatrography.
	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; *Daphnia magna*; Juvenile
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-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 (Daphnia magna). 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; *Daphnia magna*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 (Daphnia magna). 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; *Daphnia magna*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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; *Daphnia magna*; Juvenile
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; 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 test substance was identified as 1,2 Dichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was obtained from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Medium	It was stated that the percent purity for all chemicals in the paper ranged from 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative water control was used in the acute bioassay.
	Metric 5:	Negative Control Response	High	It was stated that there was no mortality among controls.
	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 test media preparation methods were adequately reported. Flask were stoppered with foil wrapped neoprene stoppers to minimize loss of volatile test substance.
	Metric 8:	Consistency of Exposure Administration	High	Exposure administration appears to be consistent.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured in select test vessels at the beginning and end of the acute bioassay but was not reported. Nominal concentrations were also not reported. End points were based on measured concentrations.
	Metric 10:	Exposure Duration and Frequency	High	Duration of exposure was 48 hours and was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	It was reported that there were six toxicant levels for 'fed' and 'unfed' bioassays. But nominal concentrations and measured concentrations for the acute bioassay were not reported.
	Metric 12:	Testing at or Below Solubility Limit	High	bioassays were conducted below water solubility limits for the compound, which has a solubility of 8600 mg/L in the Final Scope.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	Adult daphnids (Daphnia magna) were obtained from laboratorystock reared at the U.S. Environmental Protection Agency, Duluth, MN. First instar daphnids less than 24 hr old were collected from brood animals that were 3 weeks old.
	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:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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; *Daphnia magna*; Juvenile
Health Outcome:	Immobilization
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Five animals each were used for the control and six exposure levels and four replicates were used for both 'fed' and 'unfed' acute bioassays.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Environmental conditions (pH, dissolved oxygen , hardness, etc.) were reported as ranges for the acute bioassay and therefore could not evaluate whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	Immobilization was determined after 48 hours of exposure by microscopic examination and confirmed by the absence of heart beat and gut movement.
	Metric 18:	Consistency of Outcome Assessment	Low	Immobilization assessment was conducted 48 hours after exposure but cannot determine whether the timing of outcome assessment was same across study groups and controls.
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 on outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	EC 50 and LC 50 values for 'fed' and 'unfed' experiments were calculated by probit, binominal or moving average method and the specific method used was indicated in Table 2.
	Metric 22:	Reporting of Data	Low	Immobilization data for each treatment group and control group was not reported. Only EC50 values along with confidence intervals were reported.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: Exposure concentrations and measured concentrations were not reported. Mortality and immobilization data was not presented for each treatment group and controls. LC 50 and EC 50 values with confidence intervals derived from measured concentrations were reported.

Overall Quality Determination Medium

Study Citation:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; 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 test substance was identified as 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was obtained from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Medium	it was stated that the percent purity for all chemicals in the paper ranged from 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative water control was used in the acute bioassay.
	Metric 5:	Negative Control Response	High	It was stated that there was no mortality among controls.
	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 test media preparation methods were adequately reported. Flask were stoppered with foil wrapped neoprene stoppers to minimize loss of volatile test substance.
	Metric 8:	Consistency of Exposure Administration	High	Exposure administration appears to be consistent.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured in select test vessels at the beginning and end of the acute bioassay but was not reported. Nominal concentrations were also not reported. End points were based on measured concentrations.
	Metric 10:	Exposure Duration and Frequency	High	Duration of exposure was 48 hours and was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	It was reported that there were six toxicant levels for 'fed' and 'unfed' bioassays. But nominal concentrations and measured concentrations for the acute bioassay were not reported.
	Metric 12:	Testing at or Below Solubility Limit	High	Bioassays were conducted below water solubility limits for the compound, which has a solubility of 8600 mg/L in the Final Scope.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	Adult daphnids (Daphnia magna) were obtained from laboratorystock reared at the U.S. Environmental Protection Agency, Duluth, MN. First instar daphnids less than 24 hr old were collected from brood animals that were 3 weeks old.
	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
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Five animals each were used for the control and six exposure levels and four replicates were used for both 'fed' and 'unfed' acute bioassays.

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Study Citation:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Environmental conditions (pH, dissolved oxygen , hardness, etc.) were reported as ranges for the acute bioassay and therefore could not evaluate whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	Mortality was determined after 48 hours of exposure by microscopic examination and confirmed by the absence of heart beat and gut movement.
	Metric 18:	Consistency of Outcome Assessment	Low	Mortality assessment was conducted 48 hours after exposure but cannot determine whether the timing of outcome assessment was same across study groups and controls.
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 on outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	EC 50 and LC 50 values for 'fed' and 'unfed' experiments were calculated by probit, binominal or moving average method and the specific method used was indicated in Table 2.
	Metric 22:	Reporting of Data	Medium	Mortality data for each treatment group and control group was not reported. Only LC50 values along with confidence intervals were reported.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: Exposure concentrations and measured concentrations were not reported. Mortality data was not presented for each treatment group and controls. LC 50 values with confidence intervals derived from measured concentrations were reported.

Overall Quality Determination Medium

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by CASRN. (79-00-5)
	Metric 2:	Test Substance Source	High	Supplier listed as Matheson, Coleman and Bell, Manuf. Chemist.
	Metric 3:	Test Substance Purity	High	Purity reported as 95%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	It was reported that a negative control was run concurrently with the study.
	Metric 5:	Negative Control Response	High	The negative control response was reported and was adequate.
	Metric 6:	Randomized Allocation	Low	It was not reported how the daphnia were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Stock solution preparation described (sonication and mixing). Test concentrations were prepared by adding the appropriate amount of stock solution to the correct amount of dilution water. The test system was static. It was not explicitly stated for the chronic renewal tests whether a screw cap was used to prevent volatilization on a 625 mL jar with 500 mL of test solution, however notes in the data sheets indicate that the test solution was renewed every 48 hours.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures appeared to be administered consistently but details concerning the renewal of test solution limited.
	Metric 9:	Measurement of Test Substance Concentration	Low	It was not reported if the test concentrations were measured at any point in the study.
	Metric 10:	Exposure Duration and Frequency	High	The study duration was reported to be 21 days, which is typical of a chronic toxicity study for daphnia.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	There were 6 exposure levels plus a control. The spacing was adequate to see a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	The test concentrations were below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source and age of daphnia magna not stated.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	It was not reported if the organisms were acclimated to test conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 5 organisms per test chamber with 4 replicates for each treatment.

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Study Citation:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Parameters such as pH, temperature, and dissolved oxygen were reported. A feeding regimen was not adequately reported.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology lacking details of protocol–mortality.
	Metric 18:	Consistency of Outcome Assessment	Low	Mortality sometimes assessed every 24 hours and other times 48 hours.
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. There are no limitations that would result in a substantial impact 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 determined by probit analysis.
	Metric 22:	Reporting of Data	High	Raw data and a summary table were provided for all treatment levels and controls. These results were adequate for the outcome of interest.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	The 95% confidence intervals were reported, but little information was provided on what determined an unexpected outcome.

Additional Comments: This was a data summary of the chronic toxicity of 1,1,2 trichloroethane on Daphnia magna. Data sheets and a summary table were provided for this study.

Overall Quality Determination Medium

Study Citation:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by CASRN. (79-00-5)
	Metric 2:	Test Substance Source	High	Supplier listed as Matheson, Coleman and Bell, Manuf. Chemist.
	Metric 3:	Test Substance Purity	High	Purity reported as 95%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	It was reported that a negative control was run concurrently with the study.
	Metric 5:	Negative Control Response	High	The negative control response was reported and was adequate.
	Metric 6:	Randomized Allocation	Low	It was not reported how the daphnia were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Stock solution preparation described (sonication and mixing). Test concentrations were prepared by adding the appropriate amount of stock solution to the correct amount of dilution water. The test system was static. It was not explicitly stated for the chronic renewal tests whether a screw cap was used to prevent volatilization on a 625 mL jar with 500 mL of test solution, however, notes in the data sheets indicate that the test solution was renewed every 48 hours.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures appeared to be administered consistently but details concerning the renewal of test solution limited.
	Metric 9:	Measurement of Test Substance Concentration	Low	It was not reported if the test concentrations were measured at any point in the study.
	Metric 10:	Exposure Duration and Frequency	High	The study duration was reported to be 21 days, which is typical of a chronic toxicity study for daphnia.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	There were 6 exposure levels plus a control. The spacing was adequate to see a dose response.
	Metric 12:	Testing at or Below Solubility Limit	High	The test concentrations were below the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Source and age of daphnia magna not stated.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	It was not reported if the organisms were acclimated to test conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	There were 5 organisms per test chamber with 4 replicates for each treatment.
Domain 5: Outcome Assessment				

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Study Citation:	3M Environmental Lab, (1984). [Redacted] Data summary report on the tests for acute & chronic toxicity of fluorochemicals to Daphnia magna (water flea).
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; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10609980

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	Parameters such as pH, temperature, and dissolved oxygen were reported. A feeding regimen was not adequately reported.
	Metric 17:	Outcome Assessment Methodology	Medium	The outcome assessment methodology addressed or reported the intended outcome of interest but protocol details were lacking–young reproduction impairment.
	Metric 18:	Consistency of Outcome Assessment	Low	Number of live young sometimes assessed every 24 hours and other times 48 hours.
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. There are no limitations that would result in a substantial impact 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 determined by probit analysis.
	Metric 22:	Reporting of Data	High	Raw data and a summary table were provided for all treatment levels and controls. These results were adequate for the outcome of interest.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	The 95% confidence intervals were reported, but little information was provided on what determined an unexpected outcome.

Additional Comments: This was a data summary of the chronic toxicity of 1,1,2 trichloroethane on Daphnia magna. Data sheets and a summary table were provided for this study.

Overall Quality Determination Medium

Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized, but the CASRN was not reported.
	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	Low	Purity and/or grade of test substance were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	A control is reported for chemicals other than the test chemical of interest, so it is unclear if there is a control used in the test with the test substance of interest.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	The authors did not report how organisms were allocated to study groups, only how many test organisms were used. N=25 organisms in almost all tests, N=10 organisms were used in a pilot experiment.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties. There is discussion of these parameters, though they aren't all reported explicitly.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures seem to be applied consistently across groups, but it is not explicitly stated. Also, control groups are not explicitly specified.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured by chemical analysis, but were not reported explicitly.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type and/or outcome(s) of interest (e.g., acute daphnid study of 48-hour duration). There is discussion of this duration.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The number of exposure groups are not specified. The spacing of exposure levels is not reported.
	Metric 12:	Testing at or Below Solubility Limit	Medium	No solvent was used for 1,1,2-TCE, so effects of biological responses were not observed for a solvent. The water solubility limit was not specified.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pretreatment conditions were the same for control and exposed groups.

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Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The number of test organisms is reported and the number of replicates is reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Food and temperature were also tested as variables in the study. Dissolved oxygen was also a variable. However, it appears as though those variables were held constant for the test substance tests.
	Metric 17:	Outcome Assessment Methodology	Medium	The outcome assessment methodology partially addressed or reported the intended outcomes(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	Medium	There was incomplete reporting of minor details of outcome assessment protocol execution.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	Temperature, feeding, and dissolved oxygen were variables that were discussed in this publication. However, for the mortality tests, it appears as though those additional variables were held constant.
	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	Low	No effect levels are reported, but statistical analysis on how they calculated those concentrations is not reported.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for the control groups. Results were not described in the text for 1,1,2-TCE.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals).

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized, but the CASRN was not reported.
	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	Low	Purity and/or grade of test substance were not reported
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	A control is reported for chemicals other than the test chemical of interest, so it is unclear if there is a control used in the test with the test substance of interest.
	Metric 5:	Negative Control Response	Low	The biological response of the negative control groups was not reported.
	Metric 6:	Randomized Allocation	Low	The authors did not report how organisms were allocated to study groups, only how many test organisms were used. N=25 organisms in almost all tests, N=10 organisms were used in a pilot experiment.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties. There is discussion of these parameters, though they aren't all reported explicitly.
	Metric 8:	Consistency of Exposure Administration	Medium	Exposures seem to be applied consistently across groups, but it is not explicitly stated. Also, control groups are not explicitly specified.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured by chemical analysis, but were not reported explicitly.
	Metric 10:	Exposure Duration and Frequency	High	The duration of exposure and/or exposure frequency were reported and appropriate for the study type and/or outcome(s) of interest (e.g., acute daphnid study of 48-hour duration). There is discussion of this duration.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The number of exposure groups are not specified. The spacing of exposure levels is not reported.
	Metric 12:	Testing at or Below Solubility Limit	Medium	No solvent was used for 1,1,2-TCE, so effects of biological responses were not observed for a solvent. The water solubility limit was not specified.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pretreatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The number of test organisms is reported and the number of replicates is reported.

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Study Citation:	Adema, M., D.M. (1978). Daphnia magna as a test animal in acute and chronic toxicity tests. Hydrobiologia 59(2):125-134.
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; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352364

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Food and temperature were also tested as variables in the study. Dissolved oxygen was also a variable. However, it appears as though those variables were held constant for the test substance tests.
	Metric 17:	Outcome Assessment Methodology	Medium	The outcome assessment methodology partially addressed or reported the intended outcomes(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	Medium	There was incomplete reporting of minor details of outcome assessment protocol execution.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Medium	Temperature, feeding, and dissolved oxygen were variables that were discussed in this publication. However, for the mortality tests, it appears as though those additional variables were held constant.
	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	Low	No effect levels are reported, but statistical analysis on how they calculated those concentrations is not reported.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for the control groups. Results were not described in the text for 1,1,2-TCE.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals).

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Daphnia magna*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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:	Invertebrate; Arthropods; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; 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 test substance was identified as 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was obtained from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Medium	It was stated that the percent purity for all chemicals in the paper ranged from 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative water control was used in the chronic bioassay (Table 3).
	Metric 5:	Negative Control Response	Medium	It was stated that control mortality was less than 30% in the controls. According to OECD guidelines 202, mortality in controls for daphnia chronic test should not exceed 20%. The test was conducted according to Comotto, 1978 but was not available in HERO for review.
	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 test media preparation methods were adequately reported. Flask were stoppered with foil wrapped neoprene stoppers to minimize loss of volatile test substance.
	Metric 8:	Consistency of Exposure Administration	High	Exposure administration appears to be consistent.
	Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured before and during renewal of the test solution in the chronic bioassay. Nominal concentrations were not reported. End points were based on measured concentrations.
	Metric 10:	Exposure Duration and Frequency	High	Duration of exposure was 28 days and was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	It was reported that there were six test concentrations in a geometric series with a 0.5 dilution factor. Nominal concentrations were not reported but mean measured concentrations (measured at and before renewals of test solution) were reported.
	Metric 12:	Testing at or Below Solubility Limit	High	Measured concentrations were reported and these values were below the solubility limit of the test substance.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	Adult daphnids (Daphnia magna) were obtained from laboratorystock reared at the U.S. Environmental Protection Agency, Duluth, MN. First instar daphnids less than 24 hr old were collected from brood animals that were 3 weeks old.

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Study Citation:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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:	Invertebrate; Arthropods; *Daphnia magna*; Juvenile
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
	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
	Metric 15:	Number of Organisms and Replicates per Group	Medium	One daphnid per test vessel used for the control and six exposure levels and it was stated that 7-10 replicate flasks were used.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions (pH, dissolved oxygen , hardness, etc.) were reported as ranges for the chronic bioassay and therefore could not evaluate whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	Reproductive success was determined after 28 days of exposure by counting young daphnids using an Artek counter.
	Metric 18:	Consistency of Outcome Assessment	Low	No details were given on when and how frequently the authors counted the young produced in the study groups and controls.
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 on outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	ANOVA and Dunett's test were utilized to determine treatment differences on the mean number of young produced per adult during 28 days of exposure.
	Metric 22:	Reporting of Data	High	The mean number of young produced per adult and standard deviation were given for each measured concentration.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: None

Overall Quality Determination High

Study Citation:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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:	Invertebrate; Arthropods; *Daphnia magna*; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; 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 test substance was identified as 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was obtained from Aldrich Chemical Co., Milwaukee, WI but was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	Medium	It was stated that the percent purity for all chemicals in the paper ranged from 95-99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative water control was used in the chronic bioassay (Table 3).
	Metric 5:	Negative Control Response	Medium	It was stated that control mortality was less than 30% in the controls. According to OECD guidelines 202, mortality in controls for daphnia chronic test should not exceed 20%. The test was conducted according to Comotto, 1978 but was not available in HERO for review.
	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 test media preparation methods were adequately reported. Flask were stoppered with foil wrapped neoprene stoppers to minimize loss of volatile test substance.
	Metric 8:	Consistency of Exposure Administration	High	Exposure administration appears to be consistent.
	Metric 9:	Measurement of Test Substance Concentration	High	Exposure concentrations were measured before and during renewal of the test solution in the chronic bioassay. Nominal concentrations were not reported. End points were based on measured concentrations.
	Metric 10:	Exposure Duration and Frequency	High	Duration of exposure was 28 days and was appropriate for the study type.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	It was reported that there were six test concentrations in a geometric series with a 0.5 dilution factor. Nominal concentrations were not reported but mean measured concentrations (measured at and before renewals of test solution) were reported.
	Metric 12:	Testing at or Below Solubility Limit	High	Measured concentrations were reported and these values were below the solubility limit of the test substance.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	Adult daphnids (Daphnia magna) were obtained from laboratorystock reared at the U.S. Environmental Protection Agency, Duluth, MN. First instar daphnids less than 24 hr old were collected from brood animals that were 3 weeks old.
	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:	Richter, J. E., Peterson, S. F., Kleiner, C. F. (1983). Acute and chronic toxicity of some chlorinated benzenes, chlorinated ethanes, and tetrachloroethylene to Daphnia magna. Archives of Environmental Contamination and Toxicology 12(6):679-684.
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:	Invertebrate; Arthropods; *Daphnia magna*; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3634174; Linked HERO ID(s): 3634174, 18052, 3634370, 3634375, 4259619, 7494661

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	One daphnid per test vessel used for the control and six exposure levels and it was stated that 7-10 replicate flasks were used.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Environmental conditions (pH, dissolved oxygen , hardness, etc.) were reported as ranges for the chronic bioassay and therefore could not evaluate whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	High	The length of adults was determined after 28 days of exposure by determined with a 30 x dissection scope and measuring from the top of the head to the base of the spine with an ocular micrometer.
	Metric 18:	Consistency of Outcome Assessment	High	Growth outcome appears to be consistent across study groups and controls.
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 on outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	ANOVA and Dunett's test were utilized to determine treatment differences on the mean length of adult during 28 days of exposure.
	Metric 22:	Reporting of Data	High	The mean length of adult and standard deviation were given for each measured concentration.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.
Additional Comments:	None			

Overall Quality Determination High

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Dreissena polymorpha*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Lymnaea stagnalis*; NR; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Mytilus edulis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Mytilus edulis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Mollusks; *Mytilus edulis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Streptocephalus proboscideus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Chemical identified as 1,1,1-trichloroethane.
	Metric 2:	Test Substance Source	Low	The source was not reported.
	Metric 3:	Test Substance Purity	Medium	Some uncertainty over purity, used the term ”usually greater than 97% ”
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	Use of a control is inferred when calculating an LCXX value but control is not explicitly stated in cited methodology (Calleja et al 1992).
	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	Test conditions described in cited methodology (Calleja et al 1992) but no further details provided in primary reference.
	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	Low	Exposure concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	Medium	Minor limitations in duration of exposure were identified.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	Cited methodology (Calleja et al 1992) does not provide details on number of exposure groups or 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 test 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	Medium	Four replicate tests were performed.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Cited methodology (Calleja et al 1992) provides some details on environmental conditions. Biomass loading not described in cited methods or by authors.

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Study Citation:	Calleja, M. C., Persoone, G., Geladi, P. (1994). Comparative acute toxicity of the first 50 multicentre evaluation of in vitro cytotoxicity chemicals to aquatic non-vertebrates. Archives of Environmental Contamination and Toxicology 26(1):69-78.
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; *Streptocephalus proboscideus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	1023390

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 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.
	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	24 hour EC(50) values were calculated according to Trimmed Spearman-Karber method.
	Metric 22:	Reporting of Data	Low	Data for exposure-related findings were not shown for each treatment and control group. LC50 value is shown in Table 1.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.

Additional Comments: Used Toxkit

Overall Quality Determination Low

Study Citation:	Brack, W., Rottler, H. (1994). Toxicity testing of highly volatile chemicals with green algae: A new assay. Environmental Science and Pollution Research 1(4):223-228.
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; *Chlamydomonas reinhardtii*; strain number 11 -32a SAG; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane
HERO ID:	661061

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The chemical identified by nomenclature.
	Metric 2:	Test Substance Source	Low	The source and purity of the test chemical are reported, >99% purity from Fluka. But the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The purity is >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Each test series contained three controls without toxicant and two with Copper sulfate controls.
	Metric 5:	Negative Control Response	Medium	Percent inhibition for treatments from the controls were reported.
	Metric 6:	Randomized Allocation	Low	Allocation of the organisms was not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Short descriptions of the experimental system and preparation of the test materials are provided, including descriptions of volatile chemical preparations. A bipartite vessel was used for toxicity testing of volatile chemicals.
	Metric 8:	Consistency of Exposure Administration	High	Control and test concentrations were run under the same test conditions. No inconsistencies were reported.
	Metric 9:	Measurement of Test Substance Concentration	High	The effective concentrations of the compounds in the alga culture were determined using GC/ECD -(electron capture detector) analysis of extracts at the end of the assay.
	Metric 10:	Exposure Duration and Frequency	High	The algal study was conducted for 72 hours.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	There were 7 doses and a control and responses were >0 - <80 percent inhibition. The exposure concentrations tested were not provided but measured concentrations at the end of the assay was given in Fig 3.
	Metric 12:	Testing at or Below Solubility Limit	High	The solubility of 1,1,2-Trichloroethane is 4590 mg/L at 25°C(from TSCA scoping document for 1,1,2 Trichloroethane). The test concentration used (>1 - <100 mg/l were less than the solubility limit of 4590 mg/L.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The alga (strain 11-32a SAG) cultures were obtained from the University of Gottingen, Germany. The inoculum was prepared from 7 day old cultures at a concentration of 3 x 10^5 cells/mL.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Precultures and test cultures were grown under the same conditions. Seven (7) day precultures were used to initiate the study.

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Study Citation:	Brack, W., Rottler, H. (1994). Toxicity testing of highly volatile chemicals with green algae: A new assay. Environmental Science and Pollution Research 1(4):223-228.
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; *Chlamydomonas reinhardtii*; strain number 11 -32a SAG; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane
HERO ID:	661061

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The initial number of cells per concentration was reported as 3 x 10^5 cells/mL and 2 replicates run.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Chlamydomonas is not a standard test species, but the environmental conditions are similar and a nutrient medium used for the culturing and exposure.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed the intended outcome. The determination of the biomass was described as was the statistically analysis methodology. Probit routine was used to determin the EC10 and EC50s.
	Metric 18:	Consistency of Outcome Assessment	High	The outcomes were assessed at all concentrations using the same methodology.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	The authors did not report differences between the study groups for environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	No information was reported in the study about health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	The statistical methods for determining the EC10 and EC50 (Probit) was reported.
	Metric 22:	Reporting of Data	High	Dose response data, as percent inhibition, for all tested concentrations were graphed.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported. Confidence intervals were reported for the EC10 and EC50.

Additional Comments: The exposure concentrations tested were not provided but measured concentrations at the end of the assay was provided in Figure 3.

Overall Quality Determination High

Study Citation:	Brack, W., Rottler, H. (1994). Toxicity testing of highly volatile chemicals with green algae: A new assay. Environmental Science and Pollution Research 1(4):223-228.
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; *Chlamydomonas reinhardtii*; strain number 11 -32a SAG; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	661061

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	The chemical of interest is 1,1,1- Trichloroethane, which is an isomer of 1,1,2 - Tricholoroethane. The test substance was identified by nomenclature. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	The source and purity of the test chemical are reported, >99% purity from Fluka. But the test substance identity was not analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	The purity is >99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Each test series contained three controls without toxicant and two with Copper sulfate controls.
	Metric 5:	Negative Control Response	Medium	Percent inhibition for treatments from the controls were reported.
	Metric 6:	Randomized Allocation	Low	Allocation of the organisms was not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Short descriptions of the experimental system and preparation of the test materials are provided, including descriptions of volatile chemical preparations. A bipartite vessel was used for toxicity testing of volatile chemicals.
	Metric 8:	Consistency of Exposure Administration	High	Control and test concentrations were run under the same test conditions. No inconsistencies were reported.
	Metric 9:	Measurement of Test Substance Concentration	High	The effective concentrations of the compounds in the alga culture were determined using GC/ECD -(electron capture detector) analysis of extracts at the end of the assay.
	Metric 10:	Exposure Duration and Frequency	High	The algal study was conducted for 72 hours.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	There were 7 doses and a control and responses were >0 - <80 percent inhibition. The exposure concentrations tested were not provided but measured concentrations at the end of the assay was shown in Figure 3.
	Metric 12:	Testing at or Below Solubility Limit	High	The solubility of 1,1,1-Trichloroethane is 1.29 g/L H2O at 25°C.(https://www.atsdr.cdc.gov/ToxProfiles/tp70-c4.pdf). The test concentrations used (0.1 - <1 mg/l ; Fig 3) were less than the solubility limit of 1290 mg/L.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The alga (strain 11-32a SAG) cultures were obtained from the University of Gottingen, Germany. The inoculum was prepared from 7 day old cultures at a concentration of 3 x 10^5 cells/mL.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Precultures and test cultures were grown under the same conditions. Seven (7) day precultures were used to initiate the study.

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Study Citation:	Brack, W., Rottler, H. (1994). Toxicity testing of highly volatile chemicals with green algae: A new assay. Environmental Science and Pollution Research 1(4):223-228.
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; *Chlamydomonas reinhardtii*; strain number 11 -32a SAG; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	661061

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The initial number of cells per concentration was reported as 3 x 10^5 cells/mL and 2 replicates run.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Chlamydomonas is not a standard test species, but the environmental conditions are similar and a nutrient medium used for the culturing and exposure.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed the intended outcome. The determination of the biomass was described as was the statistically analysis methodology. Probit routine was used to determin the EC10 and EC50s.
	Metric 18:	Consistency of Outcome Assessment	High	The outcomes were assessed at all concentrations using the same methodology.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	The authors did not report differences between the study groups for environmental conditions or other factors that could influence the outcome assessment.
	Metric 20:	Outcomes Unrelated to Exposure	Medium	No information was reported in the study about health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	The statistical methods for determining the EC10 and EC50 (Probit) was reported.
	Metric 22:	Reporting of Data	High	Dose response data, as percent inhibition, for all tested concentrations were graphed.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes reported. Confidence intervals were reported for the EC10 and EC50.

Additional Comments: The exposure concentrations tested were not provided but measured concentrations at the end of the assay was provided in Figure 3. This evaluation form is form is for 1,1,1- Trichloroethane.

Overall Quality Determination High

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlorella pyrenoidosa*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlorella pyrenoidosa*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlorella pyrenoidosa*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to Pseudokirchneriella subcapitata. Environmental Toxicology and Chemistry 25(11):2920-2926.
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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	4141189

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 identity was not analytically verified by the performing laboratory. Source not reported.
	Metric 3:	Test Substance Purity	High	Chemical purity reported as >= 98%, reagent grade.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Authors referred to comparing 48 hour results with initial cell number or the change in D.O. production (baseline values). Cited reference (Chen et al 2005) mentions 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 organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Closed system with no headspace was described. Authors performed QC checks on treatments with algae to ensure no greater than 8% difference between nominal and measured.
	Metric 8:	Consistency of Exposure Administration	High	Exposures appeared to be administered consistently among treatment groups.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Concentration controls conducted without algae to ensure measured concentration no greater than 8% different than nominal concentration. HPLC was utilized for analysis and frequency or timing of measurement not reported.
	Metric 10:	Exposure Duration and Frequency	Medium	48 hour test, sufficient to observe results.
	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	Medium	The algal source was not reported but cited methods describe strain as UTEX 1648.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Study did not report acclimatization to the 300 mL bottles.
	Metric 15:	Number of Organisms and Replicates per Group	Low	Tests run in triplicate.

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Study Citation:	Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to Pseudokirchneriella subcapitata. Environmental Toxicology and Chemistry 25(11):2920-2926.
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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	4141189

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions adequately described.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology for dissolved oxygen and cell density was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	High	Outcomes determined at 48 h exposure.
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
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	EC50 values were obtained using probit analysis.
	Metric 22:	Reporting of Data	Medium	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the tables as EC50s with CIs.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes or none were indicated.

Additional Comments: Algal growth rate for both 1,1,2-TCA and 1,1,1-TCA. Growth rate data later recalculated and presented in HERO ID 3617867.

Overall Quality Determination Uninformative

Study Citation:	Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to Pseudokirchneriella subcapitata. Environmental Toxicology and Chemistry 25(11):2920-2926.
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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	4141189

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 identity was not analytically verified by the performing laboratory. Source not reported.
	Metric 3:	Test Substance Purity	High	Chemical purity reported as >= 98%, reagent grade.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Authors referred to comparing 48 hour results with initial cell number or the change in D.O. production (baseline values). Cited reference (Chen et al 2005) mentions 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 organisms were allocated to study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Closed system with no headspace was described. Authors performed QC checks on treatments with algae to ensure no greater than 8% difference between nominal and measured.
	Metric 8:	Consistency of Exposure Administration	High	Exposures appeared to be administered consistently among treatment groups.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Concentration controls conducted without algae to ensure measured concentration no greater than 8% different than nominal concentration. HPLC was utilized for analysis and frequency or timing of measurement not reported.
	Metric 10:	Exposure Duration and Frequency	Medium	48 hour test, sufficient to observe results.
	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	Medium	The algal source was not reported but cited methods describe strain as UTEX 1648.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Study did not report acclimatization to the 300 mL bottles.
	Metric 15:	Number of Organisms and Replicates per Group	Low	Tests run in triplicate.
Domain 5: Outcome Assessment				

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Study Citation:	Hsieh, S. H., Hsu, C. H., Tsai, D., Chen, C. Y. (2006). Quantitative structure-activity relationships for toxicity of nonpolar narcotic chemicals to Pseudokirchneriella subcapitata. Environmental Toxicology and Chemistry 25(11):2920-2926.
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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	4141189

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions adequately described.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology for dissolved oxygen and cell density was not clearly reported.
	Metric 18:	Consistency of Outcome Assessment	High	Outcomes determined at 48 h exposure.
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
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	EC50 values were obtained using probit analysis.
	Metric 22:	Reporting of Data	Medium	Data for exposure-related findings were not shown for each treatment and control group, but results were described in the tables as EC50s with CIs.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes or none were indicated.

Additional Comments: Dissolved Oxygen Production for both 1,1,2-TCA and 1,1,1-TCA.

Overall Quality Determination Uninformative

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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-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 of the trans 1,2 dichloroethylene 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 were acclimated.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	The starting 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; *Pseudokirchneriella subcapitata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-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 1,1,2-trichloroethane and 1,1,1-trichloroethane 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. Primary data was generated for 1,1,2-trichloroethane and 1,1,1-trichloroethane in a previous study, however, the data were recalculated in the current study.

Overall Quality Determination Uninformative

Study Citation:	Behechti, 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.
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; *Scendesmus subspicatus*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-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 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	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	Medium	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 Scenedesmus subspicatus 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; *Scendesmus subspicatus*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	10214703

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	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, therefore this study got an uninformative ranking.

Overall Quality Determination — Uninformative

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; *Scenedesmus subspicata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-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 chromatrography
	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; *Scenedesmus subspicata*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-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:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Gobius minutus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

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; *Limanda limanda*; Dabs from the UK–species was not specified.; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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; *Limanda limanda*; Dabs from the UK–species was not specified.; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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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; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, "Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Taxa, Species, Age:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
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	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Taxa, Species, Age:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
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	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
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	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

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Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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HERO ID:	5352365

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	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
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Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, "Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, "Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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:	Vertebrate; Fish; *Pleuronectes platessa*; NR; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
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	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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:	Vertebrate; Fish; *Poecilia reticulata*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
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	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
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Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Sanchez-Fortun, S., Sanz, F., Santa-Maria, A., Ros, J. M., Vicente, De, M. L., Encinas, M. T., Vinagre, E., Barahona, M. V. (1997). Acute sensitivity of three age classes of Artemia salina larvae to seven chlorinated solvents. Bulletin of Environmental Contamination and Toxicology 59(3):445-451.
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; *Artemia salina*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	200570

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance has been identified as 1,1,2-Trichloroethane.
	Metric 2:	Test Substance Source	Low	The test substance was obtained Sigma Chemical Company (St. Louis, USA) but was not analytically verified.
	Metric 3:	Test Substance Purity	High	Test substance was reported as ”analytical grade”
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls (solvent and water) were used.
	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	Test media preparation details were limited. Concentration of test substance was not measured during the study.
	Metric 8:	Consistency of Exposure Administration	Low	No details were provided on solvent concentration, exposure solution volume and nominal exposure concentrations.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured and nominal concentrations were not reported.
	Metric 10:	Exposure Duration and Frequency	Medium	Acute toxicity tests for 24 hr duration.
	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	It was stated that the final concentration of ethanol never exceeded 1% but the actual solvent concentration and the biological response of solvent control were not reported.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The encysted eggs of Artemia salina in dry state was obtained from San Francisco Bay Brand, Inc and nauplii were produced in the lab. Larvae aged 24-, 48- and 72-hr were tested separately.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study did not report whether test organisms were acclimatized and/or whether pretreatment conditions were the same for control and exposed groups.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	10 larvae were used per concentration and 4 replicates were used.

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Study Citation:	Sanchez-Fortun, S., Sanz, F., Santa-Maria, A., Ros, J. M., Vicente, De, M. L., Encinas, M. T., Vinagre, E., Barahona, M. V. (1997). Acute sensitivity of three age classes of Artemia salina larvae to seven chlorinated solvents. Bulletin of Environmental Contamination and Toxicology 59(3):445-451.
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; *Artemia salina*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Other (metabolite, degradant, etc.)
HERO ID:	200570

Domain	Metric	Rating	Comments
Domain 5: Outcome Assessment			
	Metric 16: Adequacy of Test Conditions	Low	There was no report on environmental conditions (other than incubating at 25oC) to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17: Outcome Assessment Methodology	High	Larvae were considered dead if they did not exhibit any internal or external movement during10 sec of observation.
	Metric 18: Consistency of Outcome Assessment	High	Outcome assessment was done after 24 hours of 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 on health outcomes unrelated to exposure.
Domain 7: Data Presentation and Analysis			
	Metric 21: Statistical Methods	High	The 24 hr-LC50 values, with 95 % confidence limits, were calculated according to Litchfield and Wilcoxon method (1949). Two-way analysis of variance with replication was conducted on LC50 values obtained for 3 age groups followed by post hoc contrast with Newman-Keuls Test.
	Metric 22: Reporting of Data	Medium	Dose-dependent mortality data was not presented. LC50 values with confidence intervals were presented for each age class of the test organism (Table1).
	Metric 23: Explanation of Unexpected Outcomes	High	There were no unexpected outcomes.

Additional Comments: The exposure concentrations and the number of exposure groups used were not reported. Mortality data was not provided. Only LC 50 values were provided.

Overall Quality Determination Uninformative

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Artemia salina*; NR; Larvae
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Taxa, Species, Age:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, "Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Chaetogammarus marinus*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; *Crangon crangon*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Uninformative	Use of control was not reported in text, figures or tables.
	Metric 5:	Negative Control Response	Low	No negative control reported.
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	Authors reported evaporation ”probably” effected results.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	Low	Authors reported concentrations likely decreased during test due to evaporation. However only the initial concentration was measured or estimated. Change in concentration was expected to effect results.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	Organisms were wild caught.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	Acclimation was 3-5 days. Therefore, there may have been unreported differences.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group (n=30) were adequate for the teest.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	LC50 with 95% CI method described, however 95 CI only shown in graph and difficult to determine what the 95 CI is.

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; *Crangon crangon*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	Statistical method adequately described.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Mortality decreased over time ”probably” due to evaporation, as reported by authors.

Additional Comments: None

Overall Quality Determination Uninformative

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Crangon crangon*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Crepidula fornicata*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Crepidula fornicata*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes that all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Mollusks; *Crepidula fornicata*; NR; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

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; *Elminus modestus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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; *Elminus modestus*; Larvae
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha diadema*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha diadema*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha diadema*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls reported.
	Metric 5:	Negative Control Response	High	Control response shown in graph adequate for test (Fig 3/4 on Page 3/6).
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Test vessels were air tight and solution was renewed every second day.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Test vessels were air tight and solution was renewed according methods described in text.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Source of organisms not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Acclimation not reported.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group (n=25) were adequate for the test.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	Intended outcomes reported.

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Uninformative	Statistical method for 96 hour LC50 ”roughly estimated”, while also reporting ”half of the test population was dead” within 24 hrs.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Half the population was dead at 24 hrs, whereas only an additional 10% mortality after 8 days.

Additional Comments: None

Overall Quality Determination Uninformative

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls reported.
	Metric 5:	Negative Control Response	High	Control response shown in table 1 (page 4) adequate for test.
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Test vessels were air tight and solution was renewed every second day.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Test vessels were air tight and solution was renewed according methods described in text.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Source of organisms not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Acclimation not reported.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group were adequate for the test.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	Intended outcomes reported.
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	hatching percent was calculated.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes reported

Additional Comments: None

Overall Quality Determination High

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls reported.
	Metric 5:	Negative Control Response	High	Control response shown in graph adequate for test (Fig 3/4 on Page 3/6).
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Test vessels were air tight and solution was renewed every second day.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Test vessels were air tight and solution was renewed according methods described in text.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Source of organisms not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Acclimation not reported.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group (n=25) were adequate for the test.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	Intended outcomes reported.

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Behavioral
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Uninformative	No statistics are presented for activity observations.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Half the population was dead at 24 hrs, whereas only an additional 10% mortality after 8 days.

Additional Comments: This form represents Ophryotrocha labronica behavior. These data are presented as ”activity” within Figure 9.

Overall Quality Determination Uninformative

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls reported.
	Metric 5:	Negative Control Response	High	Control response shown in graph adequate for test (Fig 3/4 on Page 3/6).
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Test vessels were air tight and solution was renewed every second day.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Test vessels were air tight and solution was renewed according methods described in text.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Source of organisms not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Acclimation not reported.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group (n=25) were adequate for the test.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	Intended outcomes reported.
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Uninformative	Statistical method for 96 hour LC50 ”roughly estimated”, while also reporting ”half of the test population was dead” within 24 hrs.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Half the population was dead at 24 hrs, whereas only an additional 10% mortality after 8 days.

Additional Comments: This form represents Ophryotrocha labronica mortality reported at 144 hours.

Overall Quality Determination Uninformative

Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	Compound referred to by nomenclature: 1,2-dichloroethane.
	Metric 2:	Test Substance Source	Low	Source was not reported.
	Metric 3:	Test Substance Purity	Low	Neither purity or grade was reported.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Negative controls reported.
	Metric 5:	Negative Control Response	High	Control response shown in table 1 (page 4) adequate for test.
	Metric 6:	Randomized Allocation	Low	Method of allocation not reported.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	Test vessels were air tight and solution was renewed every second day.
	Metric 8:	Consistency of Exposure Administration	High	Exposures were consistent across groups.
	Metric 9:	Measurement of Test Substance Concentration	High	Test vessels were air tight and solution was renewed according methods described in text.
	Metric 10:	Exposure Duration and Frequency	High	Exposure duration was adequate for test.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Number of exposure groups and spacing were adequate for test.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were below solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Medium	Source of organisms not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	Acclimation not reported.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	Number of organisms per group were adequate for the test.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Environmental conditions were appropriate for the test.
	Metric 17:	Outcome Assessment Methodology	High	Intended outcomes reported.
	Metric 18:	Consistency of Outcome Assessment	High	Outcome assessment consistent across groups.
Domain 6: Confounding / Variable Control				

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Study Citation:	Rosenberg, R., Grahn, O., Johansson, L. (1975). Toxic effects of aliphatic chlorinated by-products from vinyl chloride production on marine animals. Water Research 9(7):607-612.
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:	Invertebrate; Worms (e.g., Annelids, Nematodes); *Ophryotrocha labronica*; Adult
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5442093

Domain	Metric		Rating	Comments
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No confounding variables reported.
	Metric 20:	Outcomes Unrelated to Exposure	High	There were no unrelated exposures reported.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	hatching percent was calculated.
	Metric 22:	Reporting of Data	High	Results for all groups were reported.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes reported

Additional Comments: This form represents Ophryotrocha labronica reproduction reported at 216 hours.

Overall Quality Determination High

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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:	Invertebrate; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Palaemonetes varians*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Temora longicornis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Temora longicornis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; Other Invertebrate (e.g., sea urchins, ciliates, rotifers); *Temora longicornis*; NR; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	LC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlamydomonas sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; *Chlamydomonas sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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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; *Chlamydomonas sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlorella ovalis*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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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; *Chlorella ovalis*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Chlorella ovalis*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Dunaliella sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Dunaliella sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Dunaliella sp.*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Phaeodactylum tricornutum*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Identified by name in the paper, no additional information in the supplemental data.
	Metric 2:	Test Substance Source	Low	Supplemental materials note how sampling and measurements should be completed. The actual paper does not specify the manufacturer nor the verification by analytical methods.
	Metric 3:	Test Substance Purity	Low	The grade and purity are not reported in the paper nor specified in the supplemental materials.
Domain 2: Test Design				
	Metric 4:	Negative Controls	Low	The use of a blank is reported in the Toxicity paper the data is not specified. The supplemental materials note the test methodology and discuss the set-up of the blank and including the solvent as needed.
	Metric 5:	Negative Control Response	Low	The response of the control is not reported in the Toxicity paper. The supplemental materials give methodology for the test but no data presented.
	Metric 6:	Randomized Allocation	Low	The toxicity paper does not specify the allocation methods. The supplemental materials note randomized allocation for other species, but do not specify for algae.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The toxicity paper notes that static, renewal and flow-through tests are used, but are not specified by each species/chemical combination. The supplemental materials report more details for the static, renewal and flow-through methods but also do not specify by species/chemical combination.
	Metric 8:	Consistency of Exposure Administration	Medium	The toxicity paper does not provide details of the administration, but the supplemental materials provide a more detailed description of the test procedures. They do not provide the specific chemical/species information.
	Metric 9:	Measurement of Test Substance Concentration	Medium	The toxicity paper does not describe the methodology for the measurement of test substances but does note that the measured concentration are >=70% of the nominal value. The supplemental materials provides the methodology used to measure tests substances. Medium was selected as methodologies are reported in the supplemental document, but specific methodologies were not reported for each chemical/species test in the toxicity paper.
	Metric 10:	Exposure Duration and Frequency	High	The durations are reported for the acute, chronic and sub chronic studies and are appropriate for the outcomes.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Phaeodactylum tricornutum*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Medium	The toxicity paper does not describe the number of concentration used for each study. The supplemental materials provides the number of concentrations used as 2-8 for overall, routine or accurate toxicity studies. Medium was selected as numbers of concentrations are reported in the supplemental document, but specific concentration numbers were not reported for each chemical/species test in the toxicity paper.
	Metric 12:	Testing at or Below Solubility Limit	High	The toxicity paper does not specify if concentrations are below the solubility level. The Supplemental materials note, ”Concentrations of the test compound that are greater than themaximum solubility in the type of water used at the prevailingtemperature are as a rule not tested. This solubility is checkedbeforehand in accordance with Sections 1.3 and 1.5.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The toxicity paper notes the all organisms were cultured or purchased. Culturing methods are reported in the Supplemental materials.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	In most cases the toxicity paper does not specify which species are collected, purchased or reared in the laboratory. The supplemental materials document the species that can be cultured, likely to be cultured and likely to be collected. Because the toxicity paper does not document by species and the supplemental materials are vague when not bred in the TNO lab, Low is selected.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The toxicity paper does not specify the loading rate for each species. The supplemental materials note loading rates for static and flow-through studies. Because the static, renewal and flow-through studies are not specified by chemical/species Low was assigned.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	The methodology were noted as described on the supplemental materials for the toxicity document. The supplemental materials do note temperatures used for rearing in some cases, but do not specify by chemical/species. The supplemental materials to discuss the measurement of dissolved oxygen by test type (static, renewal and flow-through) but again are not specified by chemical/species.
	Metric 17:	Outcome Assessment Methodology	High	The tests measure mortality for the acute animal studies and growth parameters for the chronic, sub-chronic or plant studies.
	Metric 18:	Consistency of Outcome Assessment	High	Details are at the same time period for the outcome assessment.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	Low	Data was not presented on an individual test basis in the toxicity paper and overall methods are described in the supplemental materials.

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Study Citation:	Adema, M., D.M., Vink, G. J. (1981). A comparative study of the toxicity of 1,1,2-trichloroethane, dieldrin, pentachlorophenol and 3,4 dichloroaniline for marine and fresh water organisms. Chemosphere 10(6):533-554.
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; *Phaeodactylum tricornutum*; NR; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	5352365

Domain	Metric		Rating	Comments
	Metric 20:	Outcomes Unrelated to Exposure	Medium	Not explicitly described in the toxicity document.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	The Statistical Methods used to calculate the endpoints in the toxicity paper are not described. The supplemental materials discuss the different methods of calculating the LC50 but do not specify the methods used for the specific chemical/species tested.
	Metric 22:	Reporting of Data	Low	The raw data were not presented for the tests.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	EC50 values were reported, but variability were not.

Additional Comments: None

Overall Quality Determination Low

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; *Phaeodactylum tricornutum*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mechanistic-Photosynthesis
Chemical:	1,1,2-Trichloroethane-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; *Phaeodactylum tricornutum*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mechanistic-Photosynthesis
Chemical:	1,1,2-Trichloroethane-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:	Heitmuller, P. T., Hollister, T. A., Parrish, P. R. (1981). Acute toxicity of 54 industrial chemicals to sheepshead minnows (Cyprinodon variegatus). 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; *Cyprinodon variegatus*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 (Cyprinodon variegatus). 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; *Cyprinodon variegatus*; Juvenile
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-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 1,1,1-Trichloroethane, an isomer of 1,1,2-Trichloroethane. 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:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The chemical was identified by chemical nomenclature, 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	High	The chemical was obtained from Fluka AG, Buchs, Switzerland.
	Metric 3:	Test Substance Purity	High	The purity was reported as 99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An olive oil solvent control (25 microL injection) was reported.
	Metric 5:	Negative Control Response	High	Percent mortality was 13-21% in 3 day and 6 day control groups, consistent with literature values.
	Metric 6:	Randomized Allocation	Low	The allocation of eggs to treatment groups was not reported for the study.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Detailed methods of preparation were not reported. The test chemicals were dissolved in olive oil (25 microL) to the desired concentration prior to air sac injection. Injection hole was sealed with surgical tape.
	Metric 8:	Consistency of Exposure Administration	Medium	Eggs were injected and incubated in the same system, relative humidity ~60% and rotated daily.
	Metric 9:	Measurement of Test Substance Concentration	Low	The concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	High	Durations of exposure ranged from 8-11 days after injection.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Four different concentrations (100-5 micromol/egg) and a control were used in the study.
	Metric 12:	Testing at or Below Solubility Limit	Medium	This chemical was dissolved in olive oil for injection application, exceeding 400 microgram per microliter with final doses reported as 100 micromol/egg - 5 micromol/egg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	White Leghorn SK 12 strain werre supplied by Siipikarjanhoitajain liitto r.y., Hameenlinna, Finland. Embryos were used.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study methods did not report acclimation conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of eggs used per concentration was 10 eggs (14-15 eggs in the case of control groups). Replicate treatment groups or experiments were not reported.
Domain 5: Outcome Assessment				

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Study Citation:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Low	Experiment took place in an incubator. Exposure temperatures and lighting cycles were not reported for the incubation. Incubation had relative humidity of 60% and access to fresh air. Eggs were rotated once daily.
	Metric 17:	Outcome Assessment Methodology	Medium	Timing of outcome methodology described (dosing on days 3 and 6 of incubation with examination on day 14 of incubation). Protocol for assessing mortality was not described (i.e. did authors assess heartbeat, lack of movement, etc. for establishing mortality?). Authors state dead embryos were resorbed.
	Metric 18:	Consistency of Outcome Assessment	Medium	Dosing occurred on 3 or 6 days of incubation and eggs were examined on day 14 of incubation. Incomplete reporting of how mortality was determined but this is unlikely to have substantial impact on results.
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	Low	Authors report dosing 10 eggs in each group but reported percentages of surviving embryos and dead embryos do not equal 100% in most of the treatment groups. No explanation was provided for the missing eggs.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	LD50 values presented in text as a range for 1,1,2-trichloroethane and different chemicals.
	Metric 22:	Reporting of Data	Low	Percentage mortality for all concentrations (including control) and both timepoints was reported in Table 1. However, percent survival plus percent mortality do not equal 100% in most instances.
	Metric 23:	Explanation of Unexpected Outcomes	Uninformative	Addition of survival plus mortality percentages does not equal 100% in most of the treatments (and one of the control groups) and no explanation was provided for these circumstances. The study did not report any measures of variability (e.g., SE, SD, confidence intervals) as no experiment replication was reported.

Additional Comments: This reference reports a dose-response study on 2 different aged eggs, injection taking place on 3 days and 6 days with the study concluding on day 14 of incubation. The exposure duration is for either 8 or 11 days and this form encompasses both time points. Mortality, length/weight (growth/development), and malformations (teratogenic) were assessed in three separate evaluation forms. Data for both timepoints were reported together in each form as data appeared similar. N = 10-15 chicks per treatment. No replication of the experiment or replication of treatment groups was reported. Mortality, length/weight, and malformation data also included for 1,1,1-trichloroethane.

Overall Quality Determination — Uninformative

Study Citation:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The chemical was identified by chemical nomenclature, 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	High	The chemical was obtained from Fluka AG, Buchs, Switzerland.
	Metric 3:	Test Substance Purity	High	The purity was reported as 99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An olive oil solvent control (25 microL injection) was reported.
	Metric 5:	Negative Control Response	High	Length and weight of control groups were reported and seem reasonable for this dataset.
	Metric 6:	Randomized Allocation	Low	The allocation of eggs to treatment groups was not reported for the study.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Detailed methods of preparation were not reported. The test chemicals were dissolved in olive oil (25 microL) to the desired concentration prior to air sac injection. Injection hole was sealed with surgical tape.
	Metric 8:	Consistency of Exposure Administration	Medium	Eggs were injected and incubated in the same system, relative humidity ~60% and rotated daily.
	Metric 9:	Measurement of Test Substance Concentration	Low	The concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	High	Durations of exposure ranged from 8-11 days after injection.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Four different concentrations (100-5 micromol/egg) and a control were used in the study.
	Metric 12:	Testing at or Below Solubility Limit	Medium	This chemical was dissolved in olive oil for injection application, exceeding 400 microgram per microliter with final doses reported as 100 micromol/egg - 5 micromol/egg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	White Leghorn SK 12 strain werre supplied by Siipikarjanhoitajain liitto r.y., Hameenlinna, Finland. Embryos were used.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study methods did not report acclimation conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of eggs used per concentration was 10 eggs (14-15 eggs in the case of control groups). Replicate treatment groups or experiments were not reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Experiment took place in an incubator. Exposure temperatures and lighting cycles were not reported for the incubation. Incubation had relative humidity of 60% and access to fresh air. Eggs were rotated once daily.

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Study Citation:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
	Metric 17:	Outcome Assessment Methodology	High	Timing of outcome methodology described (dosing on days 3 and 6 of incubation with examination on day 14 of incubation). Embryos were weighed and length was determined by measuring from crown to rump. Weight was not determined for dead embryos.
	Metric 18:	Consistency of Outcome Assessment	Medium	Dosing occurred on 3 or 6 days of incubation and eggs were examined on day 14 of incubation. Unclear if embryos were patted dry prior to weighing and anesthetized prior to determining length but this is unlikely to have substantial impact on results.
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	The authors did not provide information about outcomes not associated with the chemical exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Uninformative	Statistics were not conducted and not possible to conduct statistics on the data presented.
	Metric 22:	Reporting of Data	Medium	Length and weight are reported in Table 1 for all embryos (live and dead) except in the case of 100 micromol per egg treatment at 6 day incubation. Minimal discussion in the text of these data.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals) of length or weight.

Additional Comments: This reference reports a studies on 2 different aged eggs, injection taking place on 3 days and 6 days with the study concluding on day 14 of incubation. The exposure duration is for either 8 or 11 days and this form encompasses both time points. Mortality, length/weight (growth/development), and malformations (teratogenic) were assessed in three separate evaluation forms. Data for both timepoints were reported together in each form as data appeared similar. N = 10-15 chicks per treatment. No replication of the experiment or replication of treatment groups was reported.

Overall Quality Determination Uninformative

Study Citation:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The chemical was identified by chemical nomenclature, 1,1,2-trichloroethane.
	Metric 2:	Test Substance Source	High	The chemical was obtained from Fluka AG, Buchs, Switzerland.
	Metric 3:	Test Substance Purity	High	The purity was reported as 99%.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	An olive oil solvent control (25 microL injection) was reported.
	Metric 5:	Negative Control Response	Medium	Number of malformed embryos reported in Table 3 for control group (unclear if controls from different exposure period were summed in this table). Percentage of malformed survivors for control group reported in Table 1 for each exposure period.
	Metric 6:	Randomized Allocation	Low	The allocation of eggs to treatment groups was not reported for the study.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	Detailed methods of preparation were not reported. The test chemicals were dissolved in olive oil (25 microL) to the desired concentration prior to air sac injection. Injection hole was sealed with surgical tape.
	Metric 8:	Consistency of Exposure Administration	Medium	Eggs were injected and incubated in the same system, relative humidity ~60% and rotated daily.
	Metric 9:	Measurement of Test Substance Concentration	Low	The concentrations were not measured.
	Metric 10:	Exposure Duration and Frequency	High	Durations of exposure ranged from 8-11 days after injection.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Four different concentrations (100-5 micromol/egg) and a control were used in the study. The 25 micromol per egg group was chosen for a more detailed evaluation of the teratogenic effects of tested substances.
	Metric 12:	Testing at or Below Solubility Limit	Medium	This chemical was dissolved in olive oil for injection application, exceeding 400 microgram per microliter with final doses reported as 100 micromol/egg - 5 micromol/egg.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	White Leghorn SK 12 strain werre supplied by Siipikarjanhoitajain liitto r.y., Hameenlinna, Finland. Embryos were used.
	Metric 14:	Acclimatization and Pretreatment Conditions	Low	The study methods did not report acclimation conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of eggs used per concentration was 10 eggs (14-15 eggs in the case of control groups). In the case of Table 3, a higher n was utilized for control and treated (but starting n is unclear). Replicates were not reported.

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Study Citation:	Elovaara, E., Hemminki, K., Vainio, H. (1979). Effects of methylene chloride, trichloroethane, trichloroethylene, tetrachloroethylene and toluene on the development of chick embryos. Toxicology 12(2):111-119.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; N/A (e.g., injection); Injection
Taxa, Species, Age:	Vertebrate; Avian; *Gallus domesticus*; White Leghorn SK 12 strain; Embryo
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	94468

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	Experiment took place in an incubator. Exposure temperatures and lighting cycles were not reported for the incubation. Incubation had relative humidity of 60% and access to fresh air. Eggs were rotated once daily.
	Metric 17:	Outcome Assessment Methodology	Low	Timing of outcome methodology described (dosing on days 3 and 6 of incubation with examination on day 14 of incubation). Protocol for determining occurrence of gross external malformations not described and no methodology referenced. For example, when authors state 'profound edema' in Figure 3, by what metric are they determining this endpoint?
	Metric 18:	Consistency of Outcome Assessment	Medium	Dosing occurred on 3 or 6 days of incubation and eggs were examined on day 14 of incubation. Incomplete reporting of outcome assessment protocol execution, but unlikely to have substantial impact on results.
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	The authors did not provide information about outcomes not associated with the chemical exposure.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	N/A	Data focused on pathology findings (see Table 3, Figure 1B).
	Metric 22:	Reporting of Data	Medium	Percentage of malformed survivors shown in Table 1, Table 3 reports pathology findings of 25 micromol per egg treatment group and raw data for percentage of malformed survivors, and Figure 1B shows qualitative description of a subject from the 25 micromol per egg treatment group.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability (e.g., SE, SD, confidence intervals) as no experiment replication was reported.

Additional Comments: This reference reports a studies on 2 different aged eggs, injection taking place on 3 days and 6 days with the study concluding on day 14 of incubation. The exposure duration is for either 8 or 11 days and this form encompasses both time points. Mortality, length/weight (growth/development), and malformations (teratogenic) were assessed in three separate evaluation forms. Data for both timepoints were reported together in each form as data appeared similar. N = 10-15 chicks per treatment. No replication of the experiment or replication of treatment groups was reported.

Overall Quality Determination — Low

Study Citation:	3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Inhalation
Taxa, Species, Age:	Vertebrate; Avian; *Quail-genus and species not specified*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2780694; Linked HERO ID(s): 2780694, 3121115

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized.
	Metric 2:	Test Substance Source	Low	Test substance source was not reported nor was it stated whether it was 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	The biological response of the negative control group was reported and reasonable for assessed outcomes
	Metric 6:	Randomized Allocation	Medium	Number and sex of Quail at each treatment and control groups are presented on page 4/15 (5 male and 5 females per concentration with 6 concentrations).
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The study provided little details on the 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	Medium	Analytical technologies and methods were not reported while measured concentrations were similar to nominal.
	Metric 10:	Exposure Duration and Frequency	Medium	The exposure duration was appropriate for the intended outcome.
	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	Low	Did not report whether a solvent was used for the aerosolized solutions.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The Genus and Species were not reported. This report only states that "Quail" were tested. In addition, other parameters on size and age of animals were 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	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:	3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Inhalation
Taxa, Species, Age:	Vertebrate; Avian; *Quail-genus and species not specified*; Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2780694; Linked HERO ID(s): 2780694, 3121115

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	High	The outcome assessment methodology addressed or reported the intended outcome of interest (LC50 for 1,1,1 trichloroethane in quail)
	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 outcome assessment methodology addressed or reported the intended outcome(s) of interest
	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	The method for LC50 estimation was not presented.
	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 endpoints of interest
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes

Additional Comments: This report states that ”Quail” were used but does not report Genus/species for the test organism. I looked over ref # 3121115, as it is linked to ref # 2780694, for more details on the exposure. A few more were described, but I went by what was provided in ref # 2780694 only.

Overall Quality Determination Medium

Study Citation:	3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Inhalation
Taxa, Species, Age:	Vertebrate; Mammalian; *Rattus norvegicus*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2780694; Linked HERO ID(s): 2780694, 3121115

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Medium	The test substance was identified and the specific form was characterized.
	Metric 2:	Test Substance Source	Low	Test substance source was not reported nor was it stated whether it was 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	The biological response of the negative control group was reported and reasonable for assessed outcomes
	Metric 6:	Randomized Allocation	Medium	Number and sex of rats at each treatment and control groups are presented on page 4/15 (5 male and 5 females per concentration with 6 concentrations).
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Low	The study provided little details on the 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	Medium	Analytical technologies and methods were not reported while measured concentrations were similar to nominal.
	Metric 10:	Exposure Duration and Frequency	Medium	The exposure duration was appropriate for the intended outcome.
	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	Low	Did not report whether a solvent was used for the aerosolized solutions.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The Genus and Species were not reported. This report only states that "Rat" were tested. In addition, other parameters on size and age of animals were not reported. It is probable that these are Rattus norvegicus.
	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 effects.

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Study Citation:	3M, (1984). Response to EPA document 8EHQ-1084-0535: Summary of acute inhalation studies in rats and quail with cover letter and additional use monitoring information.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Inhalation
Taxa, Species, Age:	Vertebrate; Mammalian; *Rattus norvegicus*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	2780694; Linked HERO ID(s): 2780694, 3121115

Domain	Metric		Rating	Comments
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	The outcome assessment methodology addressed or reported the intended outcome of interest (LC50 for 1,1,1 trichloroethane in rat)
	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 outcome assessment methodology addressed or reported the intended outcome(s) of interest
	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	The method for LC50 estimation was not presented.
	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 endpoints of interest
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes

Additional Comments: This report states that ”rat” were used but does not report Genus/species for the test organism. I looked over ref # 3121115, as it is linked to ref # 2780694, for more details on the exposure. A few more were described, but I went by what was provided in ref # 2780694 only.

Overall Quality Determination Medium

Study Citation:	Neuhauser, E. F., Loehr, R. C., Malecki, M. R., Milligan, D. L., Durkin, P. R. (1985). The toxicity of selected organic chemicals to the earthworm Eisenia fetida. Journal of Environmental Quality 14(3):383-388.
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); *Eisenia fetida*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	3625226

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified by name and by CASRN.
	Metric 2:	Test Substance Source	Low	The test substances came from three different sources, but it does not appear that they were analytically verified by the performing laboratory.
	Metric 3:	Test Substance Purity	High	All the test substances were reported as having a purity of 98% or greater.
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	The study reported the use of a concurrent 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 organisms were allocated into study groups.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	High	The experimental test methods were described in adequate detail. The preparation of the filter paper was reported and it was determined gravimetrically that organic did not volatilize with the organic solvents.
	Metric 8:	Consistency of Exposure Administration	High	All exposures were for 48h at 20C in the dark with one adult earthworm per vessel.
	Metric 9:	Measurement of Test Substance Concentration	Low	Exposure concentrations were not measured, though gravimetric analysis was used to determine if there was chemical loss due to solvent loss.
	Metric 10:	Exposure Duration and Frequency	High	A 48h acute exposure appeared to be sufficient.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	There were 5 exposure groups plus a negative control.
	Metric 12:	Testing at or Below Solubility Limit	Low	Test substance concentrations were not reported and thus it could not be determined if exposure concentrations exceeded the water solubility limit.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	High	The test organisms were adequately described and obtained from an in laboratory culture.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Pretreatment culture conditions appeared to be the same as test conditions. Culturing conditions were described and similar to the test conditions.
	Metric 15:	Number of Organisms and Replicates per Group	Medium	10 replicates or more were used for each test concentration.
Domain 5: Outcome Assessment				

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Study Citation:	Neuhauser, E. F., Loehr, R. C., Malecki, M. R., Milligan, D. L., Durkin, P. R. (1985). The toxicity of selected organic chemicals to the earthworm Eisenia fetida. Journal of Environmental Quality 14(3):383-388.
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); *Eisenia fetida*; Adult
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	3625226

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	High	Organisms housing was adequate to maintain organism health during the test.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome of interest–mortality was assessed after 48h and LC50s were determined.
	Metric 18:	Consistency of Outcome Assessment	High	Mortality was assessed for after the 48h exposure by gentle prodding of each organism.
Domain 6: Confounding / Variable Control				
	Metric 19:	Confounding Variables in Test Design and Procedures	High	No differences in environmental conditions among study groups was reported.
	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	LC50s were determined using the Litchfield and Wilcoxon method.
	Metric 22:	Reporting of Data	Medium	LC50s were reported, but there was no control data reported.
	Metric 23:	Explanation of Unexpected Outcomes	High	No unexpected outcomes were reported.

Additional Comments: This form is for the parent 1,1, 2 - trichloroethane (cas# 79-00-5) and the Isomer 1,1,1 trichloroethane (CAS # 71-55-6) was also studied in this paper.

Overall Quality Determination High

Study Citation:	Bowley, C. R., Bell, C. H. (1981). The toxicity of twelve fumigants to three species of mites infesting grain. Journal of Stored Products Research 17(2):83-87.
Duration:	Overall Duration: Not-reported; Exposure Duration: Not-reported
Exposure Route, Media, Path:	Terrestrial; Air; 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; *Tyrophagus longior, Acarus siro, Glycyphagus destructor*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3676086

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance was identified as Methyl chloroform which is a synonym for 1,1,2 tricholoroethane.
	Metric 2:	Test Substance Source	Low	The source was not reported and the test substance identity was not 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	It was not clear whether negative control was used. There is a mention of the use of control under fumigation technique. ”After the withdrawal of the last exposure, controls and cells exposed to 10 or 15°C were returned to 20°C by hourly steps of 2.5oC to avoid condensation” but no mention of use of controls elsewhere.
	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	Test media preparation methods were not reported. It only states that ”the desired concentration was reached by evaporating a weighed amount of liquid fumigant”. But the fumigation technique was described fairly well and steps were taken to minimize the gas loss. Concentration of test substance in the fumigation chamber was measured during the study.
	Metric 8:	Consistency of Exposure Administration	Low	Details regarding exposure administration across study groups are limited.
	Metric 9:	Measurement of Test Substance Concentration	Medium	Exposure concentrations were measured during insertion and withdrawal of test samples but only average concentrations were reported.
	Metric 10:	Exposure Duration and Frequency	Uninformative	The duration of exposure and exposure frequency were not reported. The only detail given was ”For each fumigant several exposure periods at one or more chosen concentration levels were tested”
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	The number of exposure groups were not reported. Only the concentration range tested were reported (Table 1).
	Metric 12:	Testing at or Below Solubility Limit	N/A	Fumigation experiment; exposure via air.
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test animals was not reported.
	Metric 14:	Acclimatization and Pretreatment Conditions	Medium	No details given to assess whether acclimatization and pretreatment conditions were the same for control and exposed groups.

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Study Citation:	Bowley, C. R., Bell, C. H. (1981). The toxicity of twelve fumigants to three species of mites infesting grain. Journal of Stored Products Research 17(2):83-87.
Duration:	Overall Duration: Not-reported; Exposure Duration: Not-reported
Exposure Route, Media, Path:	Terrestrial; Air; 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; *Tyrophagus longior, Acarus siro, Glycyphagus destructor*; Embryo
Health Outcome:	Mortality
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	3676086

Domain	Metric		Rating	Comments
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of test organisms and replicates was not reported. It was stated that 0.2 g of infested medium from an active mite culture was placed in each cell but the number of eggs in each cell were not reported.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Low	No details given on environmental conditions to evaluate if adequate and whether differences occurred between control and exposed populations.
	Metric 17:	Outcome Assessment Methodology	Low	The outcome assessment methodology was not appropriate. It was stated that after exposure, "each cell was examined under microscope within 5 mins and after 24 hours to assess survival of moving stages". Then the cells were examined weekly to assess survival of eggs (via hatching of larvae) and some cells were monitored for 14-16 weeks. Mould developed in some of the cells that could have affected outcome assessment.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment was confusing.
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	Low	It was reported that mould developed in some of the cells after exposure and mortalities in some cells were associated with mould.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Statistical analysis was not reported.
	Metric 22:	Reporting of Data	Low	Mortality data was not reported for each study group and controls. The dosage was expressed as concentration time product, which was obtained by multiplying average concentration by period of exposure.
	Metric 23:	Explanation of Unexpected Outcomes	Low	The study did not report any measures of variability.

Additional Comments: Source and purity of the test substance, biological response of the control, number of exposure groups, exposure duration, use of replicates and mortality data for each treatment group and control were not reported. Mould was observed in some of the cells and authors report mortalities associated with mould.

Overall Quality Determination — Uninformative

Study Citation:	Schubert, U., Wisanowsky, L., Kull, U. (1995). Determination of phytotoxicity of several volatile organic compounds by investigating the germination pattern of tobacco pollen. Journal of Plant Physiology 145(4):514-518.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vegetation; Vascular Plants; *Nicotiana tabacum L.*; (var. xanthi nc); Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	1022795

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	Low	Test substance was identified as identified as 1,1,1-trichloroethane, which is a related isomer of 1,1,2-Trichloroethane. No other information (CASRN, structure, etc.) was provided.
	Metric 2:	Test Substance Source	Low	Test substance was obtained from Merck-Darmstadt. No other details or analytical verification was provided.
	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	Concurrent negative and solvent control group (acetone) were used. The solvent was used with other chemicals in the 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	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties. The test material was injected into a sealed container and the concentrations were estimated based on the volume of the test material and the volume of the container. No analytical verification was carried out to confirm that this was an accurate estimation, but based on the clear dose-response this did not seem to have an effect on the results.
	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 not measured but based on professional judgment of experimental design and nature of test substance, actual concentrations are likely to be similar to nominal concentrations.
	Metric 10:	Exposure Duration and Frequency	Medium	This is an atypical study design, so it is impossible to tell if this is reasonable for this type of study, but the 2 hour exposure duration is very short. This was sufficient to establish a dose and effect relationship, so this exposure duration was sufficient for the goals of this study.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	Low	Exposure groups are not explicitly specified and are difficult to determine from the tables due to inconsistent spacing in the X axis.
	Metric 12:	Testing at or Below Solubility Limit	N/A	Exposure via vapor, so solubility limit is not relevant.

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Study Citation:	Schubert, U., Wisanowsky, L., Kull, U. (1995). Determination of phytotoxicity of several volatile organic compounds by investigating the germination pattern of tobacco pollen. Journal of Plant Physiology 145(4):514-518.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vegetation; Vascular Plants; *Nicotiana tabacum L.*; (var. xanthi nc); Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	1022795

Domain	Metric		Rating	Comments
Domain 4: Test Organism				
	Metric 13:	Test Organism Characteristics	Low	The source of the test plants was not reported. They appeared to be from an in-house collection.
	Metric 14:	Acclimatization and Pretreatment Conditions	High	Pollen was placed into 3.5 cm Petri dishes and held in a water saturated atmosphere for one hour. This pre-treatment ensured even hydration of the pollen grains.
	Metric 15:	Number of Organisms and Replicates per Group	Low	The number of pollen grains in each replicate was not reported. Authors used 0.5 mg of pollen in each replicate. Given the small size of pollen, this was likely an adequate measure of test organisms except that the paper indicated the grains were counted but count this was not reported in the final report.
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	High	Housing conditions for the pollen appear to be adequate. This study is not typical so there is no basis for comparison.
	Metric 17:	Outcome Assessment Methodology	High	The outcome assessment methodology addressed or reported the intended outcome(s) of interest and the assessment methodology was sensitive and appropriate for the outcomes(s) of interest.
	Metric 18:	Consistency of Outcome Assessment	Low	Details regarding the execution of the study protocol for outcome assessment (i.e. exposure concentrations) were confusing, limited, or not 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 or other factors that could influence the outcome assessment. There are no limitations that would result in a substantial impact 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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Statistical analysis was performed to calculate a dose response curve but not described adequately.
	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. Data (inhibition of germination) were presented as percentage of control. ED 50 and ED 25 values were presented without measures of variability.
	Metric 23:	Explanation of Unexpected Outcomes	High	There were no unexpected outcomes, or unexpected outcomes were satisfactorily explained.

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Study Citation:	Schubert, U., Wisanowsky, L., Kull, U. (1995). Determination of phytotoxicity of several volatile organic compounds by investigating the germination pattern of tobacco pollen. Journal of Plant Physiology 145(4):514-518.
Duration:	Overall Duration: 0 - 4 days (0-96h); Exposure Duration: 0 - 4 days (0-96h)
Exposure Route, Media, Path:	Terrestrial; Air; Not determined by study authors (i.e., chemical of interest in exposure water, but unable to determine exact uptake route)
Taxa, Species, Age:	Vegetation; Vascular Plants; *Nicotiana tabacum L.*; (var. xanthi nc); Not Applicable (e.g., fungi or algae studies) or Not Reported
Health Outcome:	Reproductive/Teratogenic
Chemical:	1,1,2-Trichloroethane-Parent compound
HERO ID:	1022795

Domain	Metric	Rating	Comments
Additional Comments:	While pollen germination is not typically considered an apical endpoint, this study indicated that pollen germination could serve as a potential benchmark dose for plant germination.		

Overall Quality Determination Medium

Study Citation:	Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (Populus deltoides x nigra DN34). Environmental Toxicology and Chemistry 20(2):389-393.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; Water; Root uptake
Taxa, Species, Age:	Vegetation; Vascular Plants; *Populus deltoides x nigra*; DN34; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	42313

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance (i.e., chemical of interest) was identified.
	Metric 2:	Test Substance Source	High	The source of the test substance was reported as a manufacturer.
	Metric 3:	Test Substance Purity	High	Chemical was analytical grade (>99%).
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group (i.e. all conditions equal except chemical exposure). Reported as one set of undosed reactors; carrier solvents were avoided.
	Metric 5:	Negative Control Response	High	The biological responses of the negative control group were reported and adequate.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups, only that n-15 cuttings were used.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties.
	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	Concentrations in dosing feed solutions were measured using gas chromatography.
	Metric 10:	Exposure Duration and Frequency	High	Exposure was 2 weeks.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Concentrations were based on a preliminary concentration-response (range-finding) experiment. Groups were established for each of the 5 different chemical concentrations, and were replicated 3 times.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit (or dispersibility limit if applicable), as reported.
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, such that the only difference was exposure to test substance.
	Metric 15:	Number of Organisms and Replicates per Group	Low	N=1 cuttings were included in each group. Groups were established for each of the 5 different chemical concentrations, and were replicated 3 times.

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Study Citation:	Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (Populus deltoides x nigra DN34). Environmental Toxicology and Chemistry 20(2):389-393.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; Water; Root uptake
Taxa, Species, Age:	Vegetation; Vascular Plants; *Populus deltoides x nigra*; DN34; Juvenile
Health Outcome:	Development/Growth
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	42313

Domain	Metric		Rating	Comments
Domain 5: Outcome Assessment				
	Metric 16:	Adequacy of Test Conditions	Medium	Temperature not stated. Other conditions described.
	Metric 17:	Outcome Assessment Methodology	High	Cuttings were weighed at start and conclusion of experiment and results presented as change in mass.
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups (e.g., at the same time after initial exposure) using the same protocol in all 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. There are no limitations that would result in a substantial impact 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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	High	A regression was performed and presented. Regression lines shown in Figure 3 could be reconstructed from Data presented in Table 2.
	Metric 22:	Reporting of Data	High	Zero Growth concentrations shown in Table 3 with standard deviation and change in Cutting mass vs Exposure concentration shown in Figure 3 and Table 2.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Standard error was reported within the graphs but not Table 2. Unclear if Table 3 variation represents standard error or standard deviation.

Additional Comments: This form also applies to 1,1,1-trichloroethane.

Overall Quality Determination Medium

Study Citation:	Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (Populus deltoides x nigra DN34). Environmental Toxicology and Chemistry 20(2):389-393.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; Water; Root uptake
Taxa, Species, Age:	Vegetation; Vascular Plants; *Populus deltoides x nigra*; DN34; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	42313

Domain	Metric		Rating	Comments
Domain 1: Test Substance				
	Metric 1:	Test Substance Identity	High	The test substance (i.e., chemical of interest) was identified.
	Metric 2:	Test Substance Source	High	The source of the test substance was reported as a manufacturer.
	Metric 3:	Test Substance Purity	High	Chemical was analytical grade (>99%).
Domain 2: Test Design				
	Metric 4:	Negative Controls	High	Study authors reported using an appropriate concurrent negative control group (i.e. all conditions equal except chemical exposure). Reported as one set of undosed reactors; carrier solvents were avoided.
	Metric 5:	Negative Control Response	Low	Control response not shown.
	Metric 6:	Randomized Allocation	Low	Researchers did not report how organisms were allocated to study groups, only that n-15 cuttings were used.
Domain 3: Exposure Characterization				
	Metric 7:	Experimental System/Test Media Preparation	Medium	The experimental system and/or test media preparation methods were adequately reported but did not completely account for physical-chemical properties.
	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	Concentrations in dosing feed solutions were measured using gas chromatography. Unclear if nominal or measured concentrations reported.
	Metric 10:	Exposure Duration and Frequency	High	Exposure was 2 weeks.
	Metric 11:	Number of Exposure Groups/ Spacing of Exposure Levels	High	Concentrations were based on a preliminary concentration-response (range-finding) experiment. Groups were established for each of the 5 different chemical concentrations, and were replicated 3 times.
	Metric 12:	Testing at or Below Solubility Limit	High	Exposure concentrations were at or below the water solubility limit (or dispersibility limit if applicable), as reported.
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, such that the only difference was exposure to test substance.
	Metric 15:	Number of Organisms and Replicates per Group	Low	N=1 cuttings were included in each group. Groups were established for each of the 5 different chemical concentrations, and were replicated 3 times.
Domain 5: Outcome Assessment				

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Study Citation:	Dietz, A. C., Schnoor, J. L. (2001). Phytotoxicity of chlorinated aliphatics to hybrid poplar (Populus deltoides x nigra DN34). Environmental Toxicology and Chemistry 20(2):389-393.
Duration:	Overall Duration: 11 - 21 days; Exposure Duration: 11 - 21 days
Exposure Route, Media, Path:	Terrestrial; Water; Root uptake
Taxa, Species, Age:	Vegetation; Vascular Plants; *Populus deltoides x nigra*; DN34; Juvenile
Health Outcome:	Respiratory
Chemical:	1,1,2-Trichloroethane-Parent compound-Other (metabolite, degradant, etc.)
HERO ID:	42313

Domain	Metric		Rating	Comments
	Metric 16:	Adequacy of Test Conditions	Medium	Temperature not stated. Other conditions described.
	Metric 17:	Outcome Assessment Methodology	Medium	"To determine transpiration rates, reactors were weighed every 2 d and water loss was calculated"
	Metric 18:	Consistency of Outcome Assessment	High	Details of the outcome assessment protocol were reported, and outcomes were assessed consistently across study groups (e.g., at the same time after initial exposure) using the same protocol in all study groups.
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 (e.g., infection) that could influence the outcome assessment.
Domain 7: Data Presentation and Analysis				
	Metric 21:	Statistical Methods	Low	Data for transpiration IC50 values are reported; no regression data are presented.
	Metric 22:	Reporting of Data	Low	IC50 values (Concn.50%T) shown in Figure 3 but no graphs presented nor results discussed in text.
	Metric 23:	Explanation of Unexpected Outcomes	Medium	Variation shown in Table 3; unclear whether this is standard error or standard deviation.

Additional Comments: This form also applies to 1,1,1-trichloroethane.

Overall Quality Determination Medium