
40 C.F.R. § 797.1950

Mysid shrimp chronic toxicity test.

- (a) *Purpose.* This guideline is intended for use in developing data on the chronic toxicity of chemical substances and mixtures (“chemicals”) subject to environmental effects test regulations under the Toxic Substances Control Act (TSCA) (Pub. L. 94–469, 90 Stat. 2003, 15 U.S.C. 2601 *et seq.*). This guideline prescribes tests using mysids as test organisms to develop data on the chronic toxicity of chemicals. The United States Environmental Protection Agency (EPA) will use data from these tests in assessing the hazard of a chemical to the aquatic environment.
- (b) *Definitions.* The definitions in section 3 of the Toxic Substances Control Act (TSCA) and in part 792—*Good Laboratory Practice Standards* of this chapter apply to this test guideline. The following definitions also apply to this guideline:
- (1) “Chronic toxicity test” means a method used to determine the concentration of a substance that produces an adverse effect from prolonged exposure of an organism to that substance. In this test, mortality, number of young per female and growth are used as measures of chronic toxicity.
 - (2) “Death” means the lack of reaction of a test organism to gentle prodding.
 - (3) “Flow-through” means a continuous or an intermittent passage of test solution or dilution water through a test chamber or a holding or acclimation tank, with no recycling.
 - (4) “G1 (Generation 1)” means those mysids which are used to begin the test, also referred to as adults; G2 (Generation 2) are the young produced by G1.
 - (5) “LC₅₀” means that experimentally derived concentration of test substance that is calculated to kill 50 percent of a test population during continuous exposure over a specified period of time.
 - (6) “Loading” means the ratio of test organism biomass (gram, wet weight) to the volume (liters) of test solution in a test chamber.
 - (7) “MATC” (Maximum Acceptable Toxicant Concentration) means the maximum concentration at which a chemical can be present and not be toxic to the test organism.
 - (8) “Retention chamber” means a structure within a flow-through test chamber which confines the test organisms, facilitating observation of test organisms and eliminating washout from test chambers.
- (c) *Test procedures—(1) Summary of the test.* (i) In preparation for the test, the flow of test solution through each chamber is adjusted to the rate desired. The test substance is introduced into each test chamber. The rate at which the test substance is added is adjusted to establish and maintain the desired concentration of test substance in each test chamber. The test is started by randomly introducing mysids acclimated in accordance with the test design into retention chambers within the test and the control chambers. Mysids
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in the test and control chambers are observed periodically during the test, the dead mysids removed and the findings reported.

(ii) Dissolved oxygen concentration, pH, temperature, salinity, the concentration of test substance and other water quality characteristics are measured at specified intervals in selected test chambers.

(iii) Data collected during the test are used to develop a MATC (Maximum Acceptable Toxicant Concentration) and quantify effects on specific chronic parameters.

(2) [Reserved]

(3) *Range-finding test.* (i) A range-finding test should be conducted to establish test solution concentrations for the definitive test.

(ii) The mysids should be exposed to a series of widely spaced concentrations of the test substance (e.g., 1, 10, 100 mg/l), usually under static conditions.

(iii) A minimum of 10 mysids should be exposed to each concentration of test substance for a period of time which allows estimation of appropriate chronic test concentrations. No replicates are required and nominal concentrations of the chemical are acceptable.

(4) *Definitive test.* (i) The purpose of the definitive test is to determine concentration-response curves, LC₅₀ values, and effects of a chemical on growth and reproduction during chronic exposure.

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