



Designation: E 1611 – 9900

Standard Guide for Conducting Sediment Toxicity Tests with Marine and Estuarine Polychaetous Annelids¹

This standard is issued under the fixed designation E 1611; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope*

1.1 This guide covers procedures for obtaining laboratory data concerning the adverse effects of potentially contaminated sediment, or of a test material added experimentally to contaminated or uncontaminated sediment, on marine or estuarine infaunal polychaetes during 10-day or 20 to 28-day exposures. These procedures are useful for testing the effects of various geochemical characteristics of sediments on marine and estuarine polychaetes and could be used to assess sediment toxicity to other infaunal taxa, although modifications of the procedures appropriate to the test species might be necessary. Procedures for the 10-day static test are described for *Neanthes arenaceodentata* and *Neanthes virens* and for the 20 to 28-day static-renewal sediment toxicity for *N. arenaceodentata*.

1.2 Modifications of these procedures might be appropriate for other sediment toxicity test procedures, such as flow-through or partial life-cycle tests. The methods outlined in this guide should also be useful for conducting sediment toxicity tests with other aquatic taxa, although modifications might be necessary. Other test organisms might include other species of polychaetes, crustaceans, and bivalves.

1.3 Other modifications of these procedures might be appropriate for special needs or circumstances. Although using appropriate procedures is more important than following prescribed procedures, the results of tests conducted using unusual procedures are not likely to be comparable to those of many other tests. Comparisons of the results obtained using modified and unmodified versions of these procedures might provide useful information concerning new concepts and procedures for conducting sediment tests with infaunal organisms.

1.4 These procedures are applicable to sediments contaminated with most chemicals, either individually or in formulations, commercial products, and known or unknown mixtures. These procedures can be used with appropriate modifications to conduct sediment toxicity tests on factors such as temperature, salinity, dissolved oxygen (DO), and natural sediment characteristics (for example, particle size distribution, organic carbon content, and total solids). These procedures can also be used to conduct bioconcentration tests and in situ tests, and to assess the toxicity of potentially contaminated field sediments, or of materials such as sewage sludge, oils, particulate matter, and solutions of toxicants added to sediments. A median lethal concentration (LC50) or median sublethal effect concentration (EC50) of toxicants or of highly contaminated sediment mixed into uncontaminated sediment can be determined. Materials adhering to sediment particles or dissolved in interstitial water can be tested.

1.5 The results of 10-day toxicity tests with contaminated sediments can be reported as a LC50 if a series of concentrations is tested or as a percent mortality relative to a control or reference sediment. The results of 20 to 28-day toxicity tests with contaminated sediments can be reported as a LC50 if a series of concentrations is tested or as a percent mortality or growth relative to a control or reference sediment.

1.6 This guide is arranged as follows:

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¹ This guide is under the jurisdiction of ASTM Committee E47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.03 on Sediment Assessment and Toxicology.

Current edition approved October April 10, 1999; 2000. Published January July 2000. Originally published as E 1611 - 94. Last previous edition E 1611 - 949.

*A Summary of Changes section appears at the end of this standard.