



Designation: E 1391 – 02

Standard Guide for Collection, Storage, Characterization, and Manipulation of Sediments for Toxicological Testing¹

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1. Scope

1.1 This guide covers procedures for obtaining, storing, characterizing, and manipulating saltwater and freshwater sediments, for use in laboratory sediment toxicity evaluations. It is not meant to provide guidance for all aspects of sediment assessments, such as chemical analyses or monitoring, geo-physical characterization, or extractable phase and fractionation analyses. However, some of this information might have applications for some of these activities. A variety of test methods are reviewed in this guide. A statement on the consensus approach then follows this review of the test methods. This consensus approach has been included in order to foster consistency among studies. The state-of-the-art is currently in its infancy, and the development of standard test methods is not feasible; however, it is crucial that there be an understanding of the significant effects that these test methods have on sediment quality evaluations. It is anticipated that recommended test methods and this guide will be updated routinely to reflect progress in our understanding of sediments and how to best study them.

1.2 There are several regulatory guidance documents concerned with sediment collection and characterization procedures that might be important for individuals performing federal or state agency-related work. Discussion of some of the principles and current thoughts on these approaches can be found in Dickson, et al (1).²

1.3 Three documents, (Environment Canada (2), USEPA (3) and Test Method E 1706) provide supplemental guidance on procedures dealing with the collection, storage, characterization, and manipulation of sediments used in toxicological assessments.

1.4 This guide is arranged as follows:

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1.5 Field-collected sediments might contain potentially toxic materials and should thus be treated with caution to minimize occupational exposure to workers. Worker safety must also be considered when working with spiked sediments containing various organic, inorganic, or radiolabeled contaminants, or some combination thereof. Careful consideration should be given to those chemicals that might biodegrade, volatilize, oxidize, or photolyze during the exposure.

1.6 The values stated in either SI or inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.7 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific hazards statements are given in Section 8.

2. Referenced Documents

2.1 ASTM Standards:

- D 1129 Terminology Relating to Water³
- D 4387 Classification of Grab Sampling Devices for Collecting Benthic Macroinvertebrates⁴
- D 4822 Guide for Selection of Methods of Particle Size Analysis of Fluvial Sediments (Manual Methods)⁵
- D 4823 Guide for Core-Sampling Submerged, Unconsolidated Sediments⁵
- E 729 Guide for Conducting Acute Tests with Fishes, Macroinvertebrates, and Amphibians⁴

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 Toxicology.

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² *Annual Book of ASTM Standards*, Vol 11.01.

³ *Annual Book of ASTM Standards*, Vol 11.05.

⁴ *Annual Book of ASTM Standards*, Vol 11.02.

⁵ *Annual Book of ASTM Standards*, Vol 14.02.