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Standard Guide for Conducting Static Acute Toxicity Tests with Echinoid Embryos^{1,2}

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1. Scope

1.1 This guide covers procedures for obtaining laboratory data concerning the acute effects of a test material on embryos and the resulting larvae of echinoid embryos (sea urchins and sand dollars) during static 48- to 96-h exposures. These procedures have generally been used with U.S. East Coast (*Arbacia punctulata* and *Strongylocentrotus droebachiensis*) (1)³ and West Coast species (*Strongylocentrotus purpuratus*, *S. droebachiensis*, and *Dendraster excentricus*) (2). The basic procedures described in this guide first originated in Japan and Scandinavia (3), and parallel procedures have been used with foreign species, especially in Japan and the Mediterranean (4). These procedures will probably be useful for conducting static acute toxicity tests with embryos of other echinoid species, although modifications might be necessary.

1.2 Other modifications of these procedures might be justified by special needs or circumstances. Although using procedures appropriate to a particular species or special needs and circumstances is more important than following prescribed procedures, the results of tests conducted by using unusual procedures are not likely to be comparable with those of many other tests. The comparison of results obtained by using modified and unmodified versions of these procedures might provide useful information concerning new concepts and procedures for conducting acute tests starting with embryos of echinoids.

1.3 These procedures are applicable to most chemicals, either individually or in formulations, commercial products, or known mixtures. With appropriate modifications, these procedures can be used to conduct acute tests on temperature, dissolved oxygen, and pH and on such materials as aqueous effluents (see also Guide E 1192), leachates, oils, particulate matter, surface waters and sediments (Annex A1). Renewal

tests might be preferable to static tests for materials that have a high oxygen demand, are highly volatile, are rapidly transformed biologically or chemically in aqueous solution, or are removed from test solutions in substantial quantities by the test chambers or organisms during the test.

1.4 Results of acute toxicity tests with echinoid embryos should usually be reported as the 50 % effect concentration (EC50) based on the total abnormally developed embryos and larvae. In some situations, it might only be necessary to determine whether a specific concentration is acutely toxic to embryos or whether the EC50 is above or below a specific concentration.

1.5 This guide is arranged as follows:

	Section
Scope	1
Referenced Documents	2
Terminology	3
Summary of Guide	4
Significance and Use	5
Apparatus	6
Facilities	6.1
Construction Materials	6.2
Test Chambers	6.3
Cleaning	6.4
Acceptability	6.5
Safety Precautions	7
Dilution Water	8
Requirements	8.1
Source	8.2
Treatment	8.3
Characterization	8.4
Test Material	9
General	9.1
Stock Solution	9.2
Test Concentration(s)	9.3
Test Organisms	10
Species	10.1
Age	10.2
Source of Embryos	10.3
Handling	10.4
Test Animal Source and Condition	10.5
Spawning and Fertilization	10.6
Quality	10.7
Procedure	11
Experimental Design	11.1
Dissolved Oxygen	11.2
Temperature	11.3
Beginning the Test	11.4
Feeding	11.5

¹ A Standard Guide is a document, developed using the consensus mechanisms of ASTM that provides guidance for the selection of procedures to accomplish a specific test, but which does not stipulate specific procedures.

² This guide is under the jurisdiction of ASTM Committee E47 on Biological Effects and Environmental Fate and is the direct responsibility of Subcommittee E47.01 on Aquatic Assessment and Toxicology.

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³ The boldface numbers in parentheses refer to the list of references at the end of this standard.