

Sediment

OECD 233: SEDIMENT-WATER CHIRONOMID LIFE-CYCLE TOXICITY TEST USING SPIKED WATER OR SPIKED SEDIMENT

TITLE OF THE TEST GUIDELINES (YEAR OF APPROVAL)

OECD 233: Sediment-Water Chironomid Life-Cycle Toxicity Test Using Spiked Water or Spiked Sediment, 2010

Keywords: effects on sediment organisms, chironomid, life-cycle test

LINK TO THE OECD SITE

- http://www.oecd-ilibrary.org/environment/test-no-233-sediment-water-chironomid-life-cycle-toxicity-test-using-spiked-water-or-spiked-sediment_9789264090910-en

WHICH OF THE REACH INFORMATION REQUIREMENTS MAY BE MET WITH THE TEST(S)

Covers Annex X Point 9.5.1. This test may be used as stand alone test for covering the information requirements for sediment organisms as well as in higher tier assessments, e.g., those based on Species Sensitivity Distributions.

STATUS OF THE VALIDATION BY EURL ECVAM

Not relevant, since this is an in vivo non-vertebrate test.

HOW TO USE THIS METHOD

The US EPA 600/R-99/064 Method 100.5: Life-cycle test for measuring the effects of sediment-associated contaminants to *Chironomus tentans* (long-term): 50 - 65-d test is mentioned but no further described in the Guidance on information requirements and chemical safety assessment (IR&CSA), Chapter R.7b: Endpoint specific guidance.

THE SPECIFIC SCOPE OF THE TG, E.G. LIMITATION ON CHEMICAL CATEGORIES COVERED, IF ANY, AND LIMITATION ON CLASSIFICATION AND LABELLING

This assay is an extension of the existing OECD test guideline 219 or 218 fully covering the 1st generation (P generation) and the early part of the 2nd generation (F1 generation). It is designed to assess the effects of prolonged exposure of chemicals to the life-cycle of the sediment-dwelling freshwater dipteran *Chironomus sp.* First instar chironomid larvae are exposed to five concentrations of the test chemical in sediment-water systems. The test substance is spiked into the water or alternatively the sediment, and first instar larvae are subsequently introduced into test beakers in which the sediment and water concentrations have been stabilised. Water spiking is intended to simulate a pesticide spray drift event and covers the initial peak concentration in surface waters. It can also be used for other types of exposure (including chemical spills), but not for accumulation processes within the sediment lasting longer than the test period. Chironomid emergence, time to emergence, and sex ratio of the fully emerged and alive midges are assessed. Emerged adults are transferred to breeding cages, to facilitate swarming, mating and oviposition. The number of egg ropes produced and their fertility are assessed. From these egg ropes, first instar larvae of the 2nd generation are obtained. These larvae are placed into freshly prepared test beakers (spiking procedure as for the 1st generation) to determine the viability of the 2nd generation through an assessment of their emergence, time to emergence and the sex ratio of the fully emerged and alive midges.

When planning a sediment test, the feeding behaviour and potential sensitivity should be considered when selecting the appropriate sediment invertebrate species. This guideline should be considered when arthropods are expected to be particularly sensitive and for covering life cycle effects. The sediment spiked route is generally recommended, other exposure conditions may be considered on a case-by-case basis. For highly lipophilic substances the use of food added to the sediment before application of the test substance is needed for ensuring proper dietary exposure.

It is considered one of the non-mammalian Level 5 test (Level 5 covers in vivo assays providing more comprehensive data on adverse effects on endocrine relevant endpoints over more extensive parts of the life cycle of the organism) described in the OECD Conceptual Framework: <http://www.oecd.org/env/ehs/testing/OECD%20Conceptual%20Framework%20for%20Testing%20and%20Assessment%20of%20Endocrine%20Disrupters%20for%20the%20public%20website.pdf>.

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