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SERVICES AUSTRALASIA

TOXICITY TEST FACT SHEET #10 – Marine Sediment

Sediment Amphipod Acute Toxicity Test

Marine amphipods are a diverse and widely distributed group of animals are an important food source for other invertebrates, fish and birds as well as being re-workers of seagrasses and seaweeds. A number of species of epifaunal amphipods have been used for toxicity assessments, however the most commonly used species in Australia is *Melita plumulosa* and *Corophium cf. volutator* .

Aquatic sediments provide a habitat for many organisms, however sediments are also a major repository for many of the more persistent chemicals that are introduced into surface waters. Although certain chemicals are highly sorbed to sediment, these compounds may still be bioavailable to the biota. Whole sediment toxicity tests using amphipods seek to determine whether contaminants in the sediment are acutely toxic.

In summary, this test involves exposing developing juvenile amphipods to test sediments for 10 days. The test is usually undertaken on a range of concentrations of a test material, eg 100, 50, 25, 12.5 and 6.3% effluent. At day 10 the sediment from each chamber is sieved and the number of surviving amphipods is recorded.

Statistical analyses are then applied to the test data to determine for example, the concentration of the test material causing 50% reduction in amphipod survival in the test population (EC50 estimate). The test data can then be used to estimate concentrations of the test material likely to cause acute toxicity in the environment.

The Sediment growth test may be used to assess the toxicity of sediments only.

The 10-day amphipod whole sediment toxicity test is usually conducted along side other sediment toxicity tests, such as the oyster larval development tests and/or the sea urchin fertilisation and larval development tests using the Puget Sound Estuary Program (PSEP) test protocols.

Sediment Amphipod Acute Toxicity Test	
Test type	Acute static
Test end-point	Survival
Test duration	10 days
Test Temperature	20 1ºC
Sample quantity required	2 kg for full EC50 determination
Test availability	7 days notice requested
Test turnaround time	Advice given within 72 hours of test initiation

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