

TOXICITY TEST FACT SHEET #9 – Marine

Acute Toxicity Test With Amphipods



The acute toxicity test using amphipods is used for the assessment of potential harm posed by contaminant to aquatic ecosystems. 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 *Allorchestes compressa*.

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. The acute toxicity test uses mainly laboratory reared juvenile amphipods and is based on USEPA test method for mysid shrimp and USEPA OPPTS850.1020 guideline for gammarid amphipods.

In summary, this test involves exposing juvenile amphipods to the test material and assessing survival over a 96 hour period. 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 the end of the exposure period, the number of surviving amphipod 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 amphipods 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 Acute Amphipod Test may be used to assess the toxicity of:

- Chemicals
- Effluents
- Leachates and groundwater
- Sediments

If toxicity is detected using the Acute Amphipod Test, a Toxicity Identification Evaluation (TIE) programme can be initiated to identify the cause of the observed toxicity.

Acute Toxicity Test With Amphipod	
Test type	Acute static
Test end-point	Survival
Test duration	96 hours
Test Temperature	25 °C (or 20 °C)
Sample volume required	4 litre for full EC50 determination
Test availability	24hrs notice requested
Test turnaround time	Advice given within 72 hours of test initiation