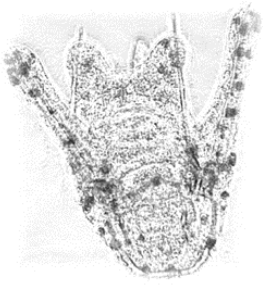
TOXICITY TEST FACT SHEET #6 – Marine

Chronic Toxicity Test With Sea Urchin Larval Development Test



Sea urchins and other echinoderms constitute a diverse and widely distributed group of marine animals. and are both ecologically and economically important. Toxicity tests utilising the short-term exposure of embryos are of comparable or greater sensitivity to many contaminants than other marine test species and life stages.

This test is commonly used throughout North America using APHA and ASTM protocols. In Australia, embryos of the sea urchin Heliocidaris tuberculata have been increasingly used in toxicity assessment programs.

In summary, this test involves exposing developing urchin embryos to the test material for 72hours. 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 normally developed and abnormal larvae are counted.

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

The Urchin Larval Development test may be used to assess the toxicity of:

- Chemicals
- Effluents
- Leachates and groundwater
- Sediments

If toxicity is detected using the chronic Urchin Larval Development test, a Toxicity Identification Evaluation (TIE) programme can be initiated to identify the cause of the observed toxicity.

Chronic Toxicity Test With the Urchin Larval Development test	
Test type	Chronic static
Test end-point	Normal development rate
Test duration	72 hours
Test Temperature	20 ± 1ºC
Sample volume required	1 litre for full EC50 determination
Test availability	24hrs notice requested
Test turnaround	Advised within 72 hours of test initiation

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