

TOXICITY TEST FACT SHEET #2 - Freshwater

Chronic Toxicity Test With *Ceriodaphnia dubia*

The Chronic (7-day partial life-cycle) toxicity test using the freshwater crustacean *Ceriodaphnia dubia* is one of the most commonly used tests for the assessment of potential harm posed by contaminants to freshwater aquatic ecosystems. Chronic tests using *Daphnia carinata* or *Daphnia magna* are also available upon request



This test is commonly used throughout North America using USEPA protocols and is usually performed along side the 48 hour acute test using the same species (see Test Fact Sheet #1). In Australia, *Ceriodaphnia cf. dubia* has also become widely used in toxicity assessment programs using the 'Sydney Clone' isolated from waters in the Sydney region.

In summary, this test involves exposing laboratory reared juvenile *Ceriodaphnia* to the test material for 7 to 8 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. The test solutions are renewed every day. At the end of the exposure period, the number of surviving *Ceriodaphnia* and the number of young produced are counted.

Statistical analyses are then applied to the test data to determine for example, the concentration of the test material causing 50% decrease in number of young produced (LC50 estimate). The test data can then be used to estimate concentrations of the test material likely to cause chronic toxicity in the environment.

The chronic *Ceriodaphnia* test may be used to assess the toxicity of:

- ▶ Chemicals
- ▶ Effluents
- ▶ Leachates and groundwater
- ▶ Sediments

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

Chronic Toxicity Test With <i>Ceriodaphnia dubia</i>	
Test type	Chronic static
Test end-point	Mortality and number of young produced
Test duration	7-8 days
Test Temperature	25 ± 1°C
Sample volume required	10 litre for full EC50 determination
Test availability	24hrs notice requested
Test turnaround time	Advised within 72 hours of test initiation