

## Ecotoxicology Division

### Capability Statement

When assessing the potential ecological risk from contaminated water and sediment, an understanding of 'bioavailability' is essential. Insufficient consideration for bioavailability (i.e. the biological effect relative to the chemical speciation of a contaminant) often leads to unnecessary and expensive remedial action or ineffective environmental management.

Geotech's Ecotoxicology Division routinely assesses water and sediment quality with an emphasis on bioavailability. Using advanced ecotoxicology and analytical chemistry techniques, Geotech deliver high reliability environmental quality assessments to meet the needs of industry and environmental regulators.

In accordance with the Australian and New Zealand Water and Sediment Quality Guidelines (ANZECC & ARMCANZ 2000), Geotech provide innovative and cost effective solutions for:

- Deriving site-specific trigger values
- Calculating protective dilution factors for industrial effluents and wastewaters
- Assessing the toxicity of contaminants in leachates and groundwater
- Identifying toxicants in complex effluents and sediments using multi-phase TIE
- Assessing the suitability of dredged materials and mine tailings for disposal
- Quantifying the environmental performance of drilling fluids and cuttings
- Characterising produced formation waters
- Condensate weathering and degradation studies
- Assessing changes in toxicity due to production modifications
- Registering chemical and pharmaceutical products
- Short-term and long-term monitoring studies
- Validating environmental risk assessments

Geotech's range of quality assured and ecologically relevant water and sediment toxicity tests are available for:

- Marine, estuarine and freshwater organisms
- Acute, sublethal and chronic endpoints
- Temperate and tropical aquatic ecosystems

#### Toxicity Tests for Water Quality Assessment



**Bacteria**  
 15-min Microtox®  
*Vibrio fischeri*



**Microalgae**  
 72-hr Cell Division  
*Isochrysis galbana*  
*Chlorella protothecoides*



**Macroalgae**  
 72-hr Germination  
*Ecklonia radiata*



**Macrophytes**  
 7-day Frond Production  
*Lemna minor*



**Molluscs**  
 48-hr Fertilisation & Development  
*Mytilus edulis*  
*Saccostrea glomeratus*



**Crustaceans**  
 21-day Reproduction  
*Gladioferens imparipes*  
*Ceriodaphnia dubia*



**Echinoderms**  
 72-hr Fertilisation & Development  
*Heliocidaris erythrogramma*



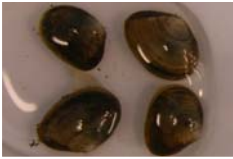
**Fish**  
 7-day Growth  
*Pagrus auratus*  
*Danio rerio*

## Toxicity Tests for Sediment Quality Assessment \*



### Amphipods

10-day Survival  
6-week Reproduction  
*Melita plumulosa*  
*Grandidierella sp.*



### Bivalves

10-day Survival and Reburial  
6-week Growth  
*Spisula trigonella*  
*Tellina sp.*



### Polychaete worms

10-day Survival and Reburial  
*Australonereis ehlersi*



### Gastropods

10-day Survival  
*Batillaria australis*  
*Velacumantus australis*

Combined with our consulting, project management and interpretive reporting expertise, Geotech offer a complete environmental quality assessment service providing cost effective management solutions that ensure ecological protection.



\* Water quality assessment bioassays can be performed on sediment porewater and elutriate extracts

For additional information and enquiries, please contact:

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Optional toxicity testing with non-standard species and methodologies to suit specific ecosystems is also available.

Complementing our ecotoxicology services are a range of ultra-trace chemical analyses for identifying and quantifying the speciation of contaminants in water and sediment. Chemical analyses are useful for preliminary screening purposes and provide additional supportive lines-of-evidence for risk assessments.

Chemical analyses for dissolved and particulate phases of contaminants are available for:

- Metals
- Organometallic compounds
- Petroleum hydrocarbons
- Pesticides and herbicides
- Chlorinated hydrocarbons
- Ammonia, nitrate and phosphate