



# SSD Tropical Ecotoxicology Laboratory

**Supervising Scientist Division (SSD) operates the most comprehensive tropical ecotoxicology laboratory in Australia**



## ***The Facility***

The Ecotoxicology Laboratory, located at the SSD laboratory complex in Darwin, is a purpose-built facility designed for the conduct of high quality ecotoxicological assessments.

The facility comprises:

Indoor and outdoor fish wet lab	Aquatic plant testing lab
Invertebrate culture lab	Washing lab
Aquatic invertebrate and fish testing lab	Preparation and instrument lab

## ***Commercial and Research Capabilities***

Ecotoxicology and related water quality assessment and monitoring methods have been employed routinely at SSD for over 15 years, primarily to investigate the risks and impacts of mining contaminants on tropical freshwater ecosystems.

Specific capabilities include:

- **Tropical Freshwater Ecotoxicology**
- Whole effluent toxicity (WET) testing
- Single toxicant toxicity testing
- Ambient/receiving water toxicity testing
- Assessment of factors affecting toxicity
- Quantitative ecological risk assessment
- Environmental chemistry
- Monitoring of fish and macroinvertebrate community assemblages
- Derivation of site-specific water quality trigger values in accordance with, and interpretation of, the *Australian & New Zealand Guidelines for Fresh and Marine Water Quality*.



SSD coordinated the revision of the *Australian & New Zealand Guidelines for Fresh and Marine Water Quality* and provided major technical input on guidance for biological assessment, including the application of ecotoxicology and biological monitoring.



## Toxicity Test Details

SSD Ecotoxicology Laboratory undertakes the following tropical freshwater toxicity tests:

Test organism		Test type (acute/chronic)	SOP ID†
Green alga	<i>Chlorella</i> sp.	72 h cell division rate (chronic)	BTT-G
Duckweed	<i>Lemna aequinoctialis</i>	96 h plant growth (chronic)	BTT-L
Cladoceran	<i>Moinodaphnia macleayi</i>	3 brood reproduction (chronic) 48 h immobilisation (acute)	BTT-D BTT-I
Gastropod	<i>Amerianna cumingi</i>	96 h egg production	BTT-S
Green hydra	<i>Hydra viridissima</i>	96 h population growth (chronic)	BTT-B
Fish (purple-spotted gudgeon)	<i>Mogurnda mogurnda</i>	96 h larval sac fry survival (acute)	BTT-E

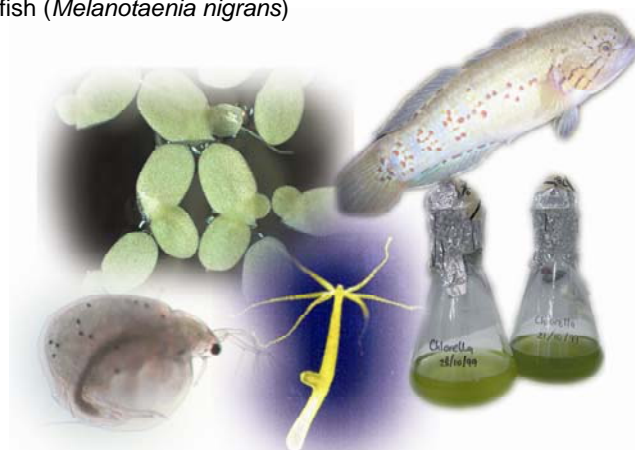
**Additional species for which toxicity testing can be undertaken:**

Black-striped rainbowfish (*Melanotaenia nigrans*)

† Standard Operating Procedure Identification

Investigations are:

- Designed to best address the issue and meet the objectives, and include:
- High quality reporting of test details, results, statistical analyses, QA/QC and interpretation



## Quality Assurance/Quality Control

Quality is a key requirement for all testing and is ensured through the following mechanisms:

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| Formal project management procedures          | Formal OH&S responsibilities                   |
| Highly trained and qualified staff            | Reference toxicity testing                     |
| Fully developed, documented protocols         | Internal and external peer review              |
| Fully documented Laboratory Procedures Manual | Formal information and data management systems |

## Examples of Current Projects

- Aquatic toxicity of magnesium sulfate and uranium and derivation of trigger values for tropical Australia
- Quantifying the influence of dissolved organic matter on the toxicity of metals in tropical freshwater ecosystems
- Whole effluent toxicity testing of 'treated pond and process waters from Ranger uranium mine



## Contact Information

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