

# ECOTOXICOLOGY



## Acute, Sublethal, and Chronic Toxicity

### TIE/TRE

### Freshwater and Marine Sediments

### Soil Testing

### Chemical Product Testing

### Additional Services

### Why Maxxam?

“Maxxam is our first choice for specialized analysis around biological uptake and biochemical indicators. We especially count on Maxxam’s depth of expertise in acute toxicity testing in aquatic media.”

– Doug Bright, PhD, RPBio  
Business Leader,  
Environmental Risk Assessment  
(Hemmera)

## Maxxam Ecotoxicology services for effluent, sediment, soil and chemical substances.

Ecotoxicology is essential for evaluating the effects of industrial processes on the environment. Operating three Ecotox labs in Canada, our team of renowned experts have over 30 years of experience in aquatic toxicity testing. Maxxam strives to be your first choice for routine and customized toxicity testing. Maxxam’s team of ecotoxicologists provide services ranging from permit bioassay to projects requiring customized experimental design and interpretive toxicology reporting.

### Acute and Sublethal Toxicity

Maxxam offers freshwater acute toxicity tests for effluent discharge monitoring in aquatic ecosystems (i.e., rainbow trout, *Daphnia magna*, fathead minnows, Microtox®). Sublethal and chronic tests are also offered for Environmental Effects Monitoring involving freshwater such as: *Ceriodaphnia*, fathead minnows, algae, *Lemna minor* and marine species including echinoderm fertilization, topsmelt, and *Champia parvula*.

### TIE/TRE

Toxicity Identification and Toxicity Reduction Evaluations are used when clients need to identify and remove the toxic components in a chemical mixture such as an effluent. The TIE is a site-specific study to isolate, identify and confirm the causative agents of toxicity in an effluent or sediment. The TIE is conducted based on procedures promulgated by the United States Environmental Protection Agency (USEPA). The TRE procedure is used as a tool to identify toxic components that may be removed or reduced in an industrial effluent to alleviate toxicity problems. It is usually necessary to complete a TIE before performing the TRE.

### Freshwater and Marine Sediments

Maxxam provides effective tools for assessing toxicity sources associated with marine and fresh water sediments (i.e. *Hyalella azetca*, *Chironomus* spp, *Lumbriculus* sp., marine amphipods, *Neanthes* spp., bivalves, echinoderms, etc.). Maxxam has considerable experience with testing sediments from contaminated sites or dredged sediments for bioaccumulation potential using organisms such as *Lumbriculus*, *Macoma* or *Neiries* sp.

### Soil Testing

Toxicity tests using organisms such as the earthworm, springtails and agricultural or native plants can be used to determine if contaminants present in soil are capable



of causing toxicity. Additionally, Maxxam has experience with new boreal forest plant testing guidelines for northern regions.

## Chemical Product Testing

Maxxam provides acute and sublethal aquatic toxicity, biodegradation, environmental fate and physico-chemical testing of chemical products for registration with agencies such as Environment Canada, Health Canada, US EPA, ECHA, IMO and OSPAR. In addition we provide chemical product testing to satisfy Eco-labelling programs including EcoLogo™ and Green Seal®.

## Additional Services

Custom studies can be designed to solve specific toxicity problems or answer regulatory requirements, using tests and techniques, such as:

- Water Effect Ratio testing (WER)
- Sediment bioaccumulation tests
- Bioconcentration/biomagnification tests
- Flow-through bioassays
- Biodegradation and Fate Testing
- (Microtox® solid and liquid phase)

We can also help you with:

- Consulting and method development
- Interpretation of results
- Legal bioassays
- Industrial toxicity audits
- Tissue analysis for metals and organic compounds
- Biomarker exposure assessment on aquatic species

## Why Maxxam?

In addition to having a world-class team of ecotoxicology experts, Maxxam is the market leader in analytical services and solutions to the energy, environmental, food and DNA industries. Maxxam's 2,200 dedicated employees proudly lead the industry in depth of technical and scientific expertise and serve customers through the only national network of laboratories. In processing over 2.2 million samples and generating in excess of 38 million results annually, Maxxam skillfully combines efficiency and customer service with rigorous science and uncompromising quality management.

Maxxam's Quality Management System (QMS) goes beyond accreditation to encompass both quality assurance and quality control. More than 40 people are employed on Maxxam's Quality Assurance (QA) team as Regional Managers, Specialists and Coordinators. To ensure independence, integrity and effectiveness of their functions, these employees report to the National Director of Quality, who reports directly to Maxxam's CEO.

Maxxam is accredited to ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA) and the Washington State Department of Ecology (WDOE). Maxxam's Ecotox laboratory in Burnaby is recognized as an OECD GLP compliant facility by the Standards Council of Canada (SCC).

## Vancouver (Burnaby), BC

4606 Canada Way  
Burnaby, BC V5G 1K5  
Tel: 604 734 7276  
Toll free: 1 800 665 8566

## Edmonton, AB

9331 – 48 Street  
Edmonton, AB T6B 2R4  
Tel: 780 577 7100  
or 780 465 1212

## Ste-Foy, QC

2690, Avenue Dalton  
Ste-Foy, QC G1P 3S4  
Tel: 418 658 5784

Maxxam is the Canadian market leader in analytical services and solutions to the energy, environmental, food and DNA industries and a member of the Bureau Veritas Group of companies – a world leader in testing, inspection and certification services. We support critical decisions made by our customers through the application of rigorous science and the knowledge and expertise of our over 2500 employees.

For more information please contact:  
[ecotox@maxxam.ca](mailto:ecotox@maxxam.ca)