Aquatic Toxicology Laboratories

Capabilities

NPDES Permit Compliance

Toxicity Identification / Reduction Evaluations [TI/RE]

Static and Flow-Through Toxicity Evaluations

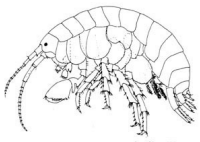
Bioassays and Biomonitoring

Whole Sediment, Sediment Elutriate, Sediment Porewater Toxicity Testing

Rapid Toxicity Tests

Water Effect Ratio Studies

Ceriodaphnia dubia



Hyelella azteca

Laboratory Coordinators

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GLEC operates aquatic toxicology laboratories at our Traverse City, Michigan and Columbus, Ohio locations. Capital improvements were made to both laboratories in 2003 as part of our ongoing commitment to providing state-of-the art aquatic toxicology services. The aquatic toxicology laboratories are fully equipped to perform static and flow-through toxicity evaluations, bioassays, and biomonitoring of complex effluents, stormwater, groundwater, whole sediment, sediment elutriate, sediment porewater and single compounds using warm and cold water fish, invertebrates and algae. All studies are conducted in accordance with EPA, state, ASTM, or client-specified guidelines. GLEC researchers are expert in developing procedures for and conducting Toxicity Identification and Reduction Evaluations (TI/RE) and have conducted numerous water-effect ratio (WER) studies in the development of site-specific criteria.

Aquatic toxicology laboratory instrumentation and equipment includes recording thermometers, pressure filtration apparati, drying ovens, centrifuge, autoclaves, temperature controlled water baths, environmental chambers, spectrophotometer, pH meters, dissolved oxygen meters, conductivity meters, and a variety of ion specific probes and a Technicon autoanalyzer for phosphorus and nitrogen analysis. Rapid toxicity tests of chemicals or complex effluents can be performed using our Microtox® 7 toxicity analyzer system. Our research staff has developed an Automated Biomonitoring System that allows us to monitor stress by measuring the ventilatory response of fish in a flow-through chamber.

Stock cultures of principal test organisms *Ceriodaphnia dubia*, *Daphnia magna*, *Daphnia pulex,* and fathead minnows required for NPDES permits are cultured in our laboratories vs. purchased from outside suppliers, thus assuring high levels of quality control. *Chironomus tentans, Hyallela azteca, Lumbriculus variegatus, Chironomus riparius,* and *Mysidopsis bahia* are available to be used as test species on an as-needed basis. Acute and chronic reference tests are conducted once a month on test organisms and the reference toxicant data is furnished with each report which is specially formatted to follow permit requirements.

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