

# Gillespie

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## BIOMONITORING LABORATORIES

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**Gillespie Biomonitoring Laboratories, Inc.** has been culturing marine organisms for use in aquatic toxicity tests for eleven years. The quality of laboratory water is vital for the successful operation of the laboratory. GBL has utilized the Aqua Ultraviolet lamp 15 watt lamp on the laboratory's saltwater system since August 20, 1997. The saltwater is used for both culturing test organisms and test dilutions.

The UV light is used for sterilization on a 200 gallon re-circulating system. Saltwater continuously flows through the UV light at three g.p.m. The water is pre-filtered with a one micron carbon filter. The saltwater water system operates twenty-four hours a day at a flow rate of three g.p.m. The saltwater is prepared with commercially available salts and de-ionized water. The salinity of the water is maintained at twenty-five parts per thousand. GBL uses approximately 200 gallons of water from this system for culture medium and test dilutions.

The laboratory saltwater is used as the culture media for marine species utilized for toxicity testing. GBL maintains two 150 gallon shrimp (*M. bahia*) culture systems. Ten to twenty percent water changes are performed weekly on each system. Since installing the Aqua ultraviolet lamp the production of *M. bahia* has increased. A seven tank, 140 gallon *M. bahia* holding system is used to grow out *M. bahia* for testing and broodstock. Two 100 gallon minnow culture systems are in use for the production of larvae for test use. Twenty percent of the water is change monthly on each minnow system. Production of larvae and survival of brood stock has remained high since the Aqua ultraviolet lamp was installed. The lab maintains holding systems for minnow larvae that are used in toxicity tests and restocking brood cultures. The holding systems' water is changed daily. Excellent survival and growth rates are maintained in the organism holding systems. The saltwater is also used to culture zooplankton and algae for use as a food source.

The saltwater is used for mixing dilutions of toxicity test samples. Organisms are exposed to different concentrations of effluents and toxicants for 24 hours to 28 days. Test solutions are renewed every 24 hours. A control dilution consisting of 100% lab saltwater is set up with each test. Both survival and growth parameters must be met in the control for a toxicity test to be valid. The lab consistently meets control parameters using laboratory saltwater. As part of the laboratory's quality assurance a monthly reference toxicant test is performed on each species to determine if all aspects of the laboratory's testing and culture methods remain within acceptable limits. Organism survival and growth in the reference toxicant tests consistently fall within the required parameters.

Since installing the Aqua Ultraviolet lamp Gillespie Biomonitoring Laboratories has consistently maintained high quality saltwater for use in marine organism culturing and testing. The plastic housing of the Aqua Ultraviolet lamp has not caused any adverse effect to the laboratory organism culture or test systems.



**Gillespie Biomonitoring Laboratories, Inc.**  
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Laboratory Manager