

# TIE/TRE Testing

EnviroScience biologists have extensive experience with culturing and examining many different species of freshwater, saltwater, and sediment organisms. Our toxicologists can customize study plans to meet numerous requirements for specialty projects meeting the needs of each individual client. Contact our Bioassay Laboratory about developing a special toxicity test for you.

## Toxicity Identification Evaluations & Toxicity Reduction Evaluations (TIE/TRE)

When bioassay and/or biomonitoring data reveal persistent toxicity in a particular system, it is often necessary to conduct a series of evaluations in order to characterize the toxic agent(s). Toxicity Identification Evaluations (TIEs) and Toxicity Reduction Evaluations (TREs) may be required as part of a National Pollutant Discharge Elimination System (NPDES) permit. The methods for TIE/TRE apply to effluents, sediment pore waters, sediment elutriates and hazardous waste leachates.



The overall objective of a TIE/TRE is to identify and eliminate the source of the toxicity. The professionals at EnviroScience can custom design a program to meet each

client's needs. We have decades of combined experience in this area, allowing us to be strong advocates for our clients when they are faced with complex regulatory challenges.

By nature, the TIE/TRE process must proceed in step-wise, iterative fashion. In order to characterize the constituents responsible for toxicity, the TIE approach follows three phases (USEPA 1991). Phase I determines the physical and chemical nature of the toxicants by measuring parameters such as solubility, volatility and filterability (USEPA 1991). In Phase II, toxics are specifically described as non-polar organics, ammonia or metals (USEPA 1993). During Phase III, the suspected toxicants are confirmed (USEPA 1993).

Information obtained by one technique must be verified and evaluated before determining the next course of action. For these reasons, EnviroScience's approach rarely sets forth a fixed sequence of steps to be followed at the onset of a TIE/TRE project. Rather, we work with our clients to develop a conceptual plan for the TIE/TRE which accomplishes the following major tasks:

- First, ES will determine whether toxicity is consistently present. If so, we will determine a baseline for future studies.
- Second, we will thoroughly evaluate facility-wide practices, processes, and chemical usage in an attempt to identify factors that influence toxicity in the facility's discharge. This is termed an operational assessment/chemical optimization study, and it identifies both potential problem areas and corrective measures.
- Next, we attempt to identify the general class (es) of toxicant(s) present and then proceed to identify the specific toxicant(s) and source(s). Information gathered in the operational assessment is used to prioritize and minimize the laboratory portions of the study.

- Finally, we provide information and technical guidance, as needed, to support any necessary treatment or process changes.

By proceeding in a step-wise fashion we help our clients minimize expenditures on the laboratory analyses, which are often the most costly parts of these studies. Unlike many laboratories which bundle toxicity identification analyses, we use each client's knowledge of their facility and our extensive experience with a wide range of industrial and municipal plants to prioritize and select only those analyses which are most appropriate.

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EnviroScience provides high quality environmental services to hundreds of satisfied municipal, industrial, and private sector clients throughout the Midwest and Northeast. We have clients in Ohio, Pennsylvania, West Virginia, Illinois, New York, Michigan, Indiana, Tennessee, and many other states. Our company has an excellent reputation with regulatory agencies on both the state and federal level. Our confidence in our methodology and the professionalism of our experienced biologists allows us to guarantee that our procedures and reported data will meet all acceptance criteria.

## In Action





## Need help with your project?

Our experts are here to discuss your needs and how we can help you move your project forward. Fill out the form below for more information on our services or to request a quote and we'll get back to you within 24 hours. If you need a response within an hour or less, please call us at 888-866-8540.

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