

## TOXICITY IDENTIFICATION/REDUCTION EVALUATION HISTORICAL PERSPECTIVE (TI/RE)

Hello. I'm Frank Doherty, Founder and President of Aquatox Research.

As I discussed in the previous video, The New York State Department of Environmental Conservation conducts two levels of assessment of WETT results on a facility's wastewater. In the event that testing produces an unacceptable level of toxicity, the DEC might impose a requirement to conduct a Toxicity Identification/Reduction Evaluation or TI/RE program.

The goal of a TI/RE program is to either identify the contaminant causing the unacceptable level of toxicity or its source or both. Once one of those options is achieved, it is then the responsibility of the permittee to resolve the toxicity issues and discharge wastewater that does generate an unacceptable level of toxicity.

The TI/RE process typically begins with the development of a research plan that is submitted to the DEC for approval. The plan need not be detailed or lengthy. Its primary purpose is simply to organize and establish activities to be undertaken. It is not uncommon for the early stages of a TI/RE to produce information that alters the direction of the research.

The scope of a TI/RE plan can take many designs in part because toxicity issues are always site-specific. The starting point for many TI/REs are protocols developed by the US EPA in the late 1980s.

The protocols were published in three separate documents with each addressing a different phase of the TI/RE process which included [Toxicity Characterization Procedures](#), [Toxicity Identification Procedures](#) and [Toxicity Confirmation Procedures](#).

Phase I involves physically or chemically modifying a toxic sample in some fashion then retesting to see if toxicity has been reduced. If it has, then Phase II procedures attempt to identify the toxic material. Once toxic components have been identified, Phase III attempts to exclude those components from the wastewater to determine if toxicity has truly been reduced. Even though WETT testing is an integral part of this strategy, the original protocols rely heavily on analytical approaches to achieve their goals.

Thank you for your time. Please join me in the follow on video where I discuss the various aspects of alternate approaches to TI/REs.

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