

## Whole Effluent Toxicity (WET) Basics - Current TCEQ Policy

**WET testing:** The purpose of WET testing is to assess the effect that a permitted wastewater discharge may have on the aquatic organisms in the receiving waters. This is accomplished by exposing aquatic organisms to the discharge in a controlled test. The test simulates and measures the interaction of constituents in the discharge at a given distance from the point of discharge, typically at the edge of the mixing zone.

### Regulatory Authority:

40 Code of Federal Regulations §122.44(d)(1)  
30 Texas Administrative Code §307.6(e)

### WET testing is applicable in the following situations

Domestic wastewater dischargers with:

Permitted wastewater flow of 1 MGD or greater  
EPA-approved pretreatment program  
Potential to effect toxicity in receiving waters

Industrial wastewater dischargers with:

EPA-classified majors  
Continuously-discharged process wastewater  
Potential to effect toxicity in receiving waters

### Three Types of WET testing

24-hour acute: measures lethality to specified invertebrate/vertebrate species

48-hour acute: measures lethality to specified invertebrate/vertebrate species

7-day chronic: measures lethality and sublethality (growth/reproduction) to specified invertebrate/vertebrate species

### Test Organisms Used

Freshwater:

Chronic:	<i>Ceriodaphnia dubia</i>	(water flea)
	<i>Pimephales promelas</i>	(fathead minnow)
Acute:	<i>Daphnia pulex</i>	(water flea)
	<i>Pimephales promelas</i>	(fathead minnow)

Saltwater:

Chronic and Acute:

*Mysidopsis bahia* (mysid shrimp)  
*Menidia beryllina* (inland silverside)

## Passing vs. Failing WET

**Passing:** When the difference between the critical dilution (% effluent at the mixing zone) and the control is not statistically significant, the test is considered to have passed.

**Failing:** When the difference between the critical dilution (% effluent at the mixing zone) and the control is statistically significant, the test is considered to be a failure.

After a failure, TCEQ policy requires the permittee to conduct 2 additional consecutive monthly tests for LETHALITY ONLY to determine persistent toxicity.

A Toxicity Reduction Evaluation (TRE) is required when persistent toxicity is demonstrated after the initial failure and when both subsequent retests fail.

**Toxicity Reduction Evaluation (TRE):** A test method to try to determine the source of the lethal toxicity. There are three possible outcomes to a TRE:

**Chemical specific limit:** If an actual toxicant was identified as causing the test failure, then a limit is placed in the permit for that particular toxicant. This limit is enforceable.

**Whole Effluent Toxicity limit (WET limit):** If no single toxicant was identified, then a limit is placed in the permit for the toxicity of the entire effluent. This limit is enforceable.

**Best Management Practice (BMP):** Very rarely used; assessed in situations where a BMP will clearly prevent the toxicant from ever entering the wastewater treatment system.

The current Implementation Procedures also indicate that persistent sublethal effects may have to be addressed by a TRE to attempt to determine a source of sublethal toxicity. Currently, there are no stipulations indicating this may lead to a sublethal WET limit.