

WESTERN COALITION OF ARID STATES POLICY STATEMENT ON WHOLE EFFLUENT TOXICITY

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The Whole Effluent Toxicity (WET) test was developed to assess the potential of an effluent discharge to induce toxic effects in aquatic life. This test provides a valuable tool for protecting the nation's waters since it is not possible to assess the potential for toxic effects using solely chemical testing.

The Western Coalition of Arid States (WESTCAS) is committed to the goal of protecting the chemical, physical, and biological integrity of the Nation's waters. Whole Effluent Toxicity (WET) testing contributes to this goal. However, when WET requirements are incorporated into permits for the discharge of treated effluent, the requirements should be consistent with the capabilities of the test.

Presented below is background information on the characteristics of the test and the special challenges WET testing poses to permittees in the arid West. WESTCAS policy recommendations are provided.

BRIEF SUMMARY OF THE ISSUE

Key features of the test that should be considered when the test is used in a regulatory context include the following:

- Because the test relies on the response of living organisms, there is inherent variability in test results. The issue of variability (i.e., the precision of the test) is acknowledged in the findings of the Court in the *Edison Electric Institute, et al.* petition to the District of Columbia Court of Appeals. The Court, while finding that the WET testing methods are valid, identified the variance in test results as, "certainly a problem for which EPA's system must account."
- Scientific studies relating the frequency and magnitude of sublethal test failures to a potential for aquatic life impacts are lacking. In fact, available studies have failed to identify a benefit in using sublethal tests results rather than lethal test results as a screening criterion to preclude instream impacts.
- The variability of the organism response limits the ability of a permittee to determine the cause of sublethal test failures. The Toxicity Identification Evaluation/Toxicity Reduction Evaluation (TIE/TRE) protocols used to identify the causative factors when there are lethal test failures are often unsuccessful when there are only sublethal test failures, especially for domestic wastewater systems.

DESCRIPTION OF IMPACTS ON ARID WEST

WET testing poses special challenges for permittees in the arid West because of the following conditions:

- The salts present in waters in the arid West, both in water supplies and receiving waters, frequently cause ionic interference in WET testing.
- Most receiving waters are ephemeral streams or effluent-dependent waters. Because of the absence of dilution, test pass or failure is typically determined based on samples that are 100% effluent, or close thereto. This is a problem for two reasons:
 - The effluents frequently have a different ionic composition than the waters in which the organisms are cultured; so, there is a lag in reproduction while the organisms adjust to the change in their environment. This lag is classified as a test failure
 - To perform a sublethal TIE/TRE, a strong toxic signal is required. If the failure in 100% effluent is borderline, there is nothing a permittee can do to strengthen the signal. In comparison, if there is a borderline failure in a sample containing 25% effluent, it is sometimes possible to work with a 100% effluent sample and have a stronger signal.

WESTCAS believes that permittees have a responsibility to be diligent in protecting water resources. However, it is inequitable and inappropriate to impose penalties based on permit limits that do not reflect the variability of the test, have not been shown to be necessary to protect aquatic resources, and with which the permittee cannot achieve compliance because tools are not available to determine the cause of the test failures.

WESTCAS RECOMMENDATION

WESTCAS believes that the proper role for WET testing in permits is to identify those instances wherein an effluent has a real potential to produce toxic effects in aquatic organisms and to facilitate the identification of appropriate measures to control the toxic effects. To this end, and in consideration of the capabilities of the test as outlined above, WET permit provisions should be based on the following principles:

- The Reasonable Potential determination should be based on a more scientifically valid approach than that set forth in the *Technical Support Document for Water-Quality-Based Toxics Control* (TSD). The TSD approach concludes there is a Reasonable Potential that toxic effects in aquatic life exist if there is a single WET test failure (lethal or sublethal) over the period of record being evaluated. There are no scientific studies that suggest that a single sublethal test failure over a multi-year period can be correlated to instream impacts.
- Multiple lethal failures of a WET test should trigger a TIE/TRE. Sublethal TIE/TREs should not be required
- A numeric WET permit limit is generally inappropriate. However, if a limit is imposed, it should be consistent with the variability of the test. In addition, it should only be imposed when there is a reasonable probability of conducting a successful TIE/TRE.

- There should not be sublethal WET permit limits because of the lack of evidence that regulation based on sublethal test results protects aquatic resources and the variability of sublethal tests.
- The limit should be a median of test results over an appropriate period of time. The time period should be longer for chronic lethality than for acute lethality. A minimum time period for the determination of the median value for chronic lethality should be three months.
- Sublethal test failures should trigger accelerated testing to determine whether lethal effects are also present.

- Endpoints based on the Percent Effect, which has been determined based on a curve fit line that considers all test dilutions, should be acceptable, in addition to the No Observed Effect Concentration (NOEC) and the 25% Inhibition Concentration (IC25) endpoints.
- Permit limits should not be established and/or penalties incurred for test failures resulting from the composition and concentrations of the major ions in the domestic water supply for the area served by the wastewater treatment facility.
- Enforcement protocols should incorporate the following concepts:
 - If, in spite of due diligence of the permittee in conducting a TIE/TRE, a means to eliminate WET test failures cannot be identified, other opportunities for relief from incurring violations should be provided.
 - As long as the permittee is pursuing a TIE/TRE with due diligence, the permittee should not be in violation of their permit.