



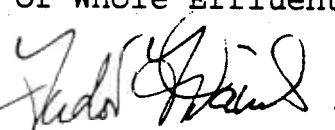
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

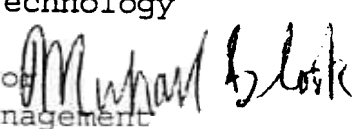
Dated: July 21, 1997

OFFICE OF
WATER

MEMORANDUM

SUBJECT: Clarifications Regarding Whole Effluent Toxicity Test Methods Recently Published at 40 CFR Part 136 and Guidance on Implementation of Whole Effluent Toxicity in Permits

FROM: Tudor T. Davies, Director 
Office of Science and Technology

Michael B. Cook, Director 
Office of Wastewater Management

TO: Water Management Division Directors, Regions I-X
Environmental Services Division Directors, Regions I-X

The purpose of this memorandum is to provide further clarifications regarding the Whole Effluent Toxicity (WET) test methods promulgated at 60 Fed. Reg. 53529 (Oct. 16, 1995), as well as to provide additional guidance on the implementation of WET through National Pollutant Discharge Elimination System (NPDES) permitting. We ask that you share this memorandum with the States in your Region approved to administer the NPDES permitting program. In addition, we would encourage States to make the information available to their NPDES permittees and appropriate test analysts.

The clarifications and guidance in today's memorandum are intended to supplement the memorandum sent out on April 10, 1996 by Tudor T. Davies, on "Clarifications Regarding Flexibility in 40 CFR Part 136 Whole Effluent Toxicity (WET) Test Methods". The guidance in today's memorandum is also intended to supplement the EPA guidance provided in the *Technical Support Document for Water Quality-Based Toxics Control*, (March 1991, EPA/505/2-90-001) and

the EPA Whole Effluent Toxicity (WET) Control Policy (July 1994, EPA 833-94-002. The following information answers some of the questions posed to the Agency since development of those documents. The first two parts of this memorandum answer questions about the effect of the method promulgation; the last three provide guidance about WET implementation. EPA permit writers are expected to follow this guidance, although decisions on individual permit provisions should be made on a case-by-case basis, applying the law and regulations to specific facts and justifying decisions in the record for the permit.

1. With the promulgation of WET methods in 40 CFR Part 136, did EPA provide recommended numeric criteria for WET under CWA section 304?

No. To date, and including the October 16, 1995 analytical methods rulemaking (60 Fed. Reg. 53529), the Agency has not established nationally-applicable criteria for whole effluent toxicity, for either acute or chronic toxicity under CWA section 304(a). The only available criteria related to WET were developed for and apply only in the Great Lakes basin.

While explicitly applicable only in the Great Lakes basin, the final Water Quality Guidance for the Great Lakes System in 40 CFR Part 132 (also known as the Great Lakes Initiative or GLI) does contain specific requirements pertaining to WET. The final Guidance requires Great Lakes States and Tribes to adopt 0.3 TU_a and 1.0 TU_c either as numeric criteria or as an equivalent numeric interpretation of narrative criteria (60 FR 15422). The final Guidance also specifies the Part 136 WET methods as the required methods for measuring these values. See Water Quality Guidance for the Great Lakes System, 60 FR 15366 at 15422 and 15378, March 23, 1995.

2. With the promulgation of 40 CFR Part 136, did EPA mandate which WET test methods NPDES authorities must use for the different types of designated uses of receiving waters?

No. To date, including the WET methods rulemaking, EPA has not mandated which test methods NPDES permitting authorities must use under different exposure conditions. The WET analytical methods rule simply prescribes how to conduct the tests, and that, if the permitting authority makes the decision to include a

WET limit in a permit, one of the promulgated methods must be used. 40 CFR 122.41(j)(4). Of course, procedures for approval of alternate test procedures under 40 CFR 136.4 & 136.5 still continue to apply. The permit writer has considerable discretion in selecting the appropriate test method (i.e., which test) as long as the method selected is consistent with the State's water quality standards and will protect the individual water in question, including the designated use.

If a State adopts a numeric toxicity criterion and the criterion specifies the organism(s) and the endpoint(s) (e.g., NOEC, IC25, growth, reproduction, or mortality), the permit writer would need to use that species and endpoint unless the State adopts and EPA approves a site-specific water quality criterion. 40 CFR 122.44(d)(1). Where a numeric criterion has not been adopted, we would expect the permitting authority to interpret the State narrative criterion for water quality in order to establish the appropriate effluent limitations, including any necessary toxicity limitations. In fact, States are required to provide information identifying the method by which the State intends to regulate point sources of toxic pollutants based on narrative criteria. Therefore, we assume that States will have information for the interpretation and implementation of narrative criteria. 40 CFR 131.11(a)(2).

The permit writer must exercise his or her best professional judgement pursuant to 40 CFR 122.44(d), or analogous State law, to derive an appropriate WET limit, taking into consideration any State policies and or procedures for interpreting the narrative and any available site-specific information. If, for example, a State designates a water body to be fishable and swimmable, then the permit must include limitations as necessary to protect that designated use, even if that water body is an agricultural or storm water ditch (presuming that ditch is a "water of the United States").

The actual WET limit required for such habitat-limited receiving waters would depend upon the specificity with which the State has articulated the designated use and the criteria for the receiving water, any flexibility in interpreting such standards (i.e., narrative or numeric criteria), and whether or not sufficient site-specific information is available to demonstrate that the effluent limitation is as stringent as necessary to

protect the designated use. Therefore, to avoid controversy that may arise in permit issuance decisions for such water bodies, States and EPA Regions should determine the toxicity criteria and corresponding WET test species and endpoints appropriate for the designated use of the receiving water.

In making this determination, NPDES permitting authorities should consult the appropriate water quality standards, including the designated use, numeric toxicity criteria where they exist, State policies and or procedures for interpreting the narrative criterion for water quality, and site-specific information. Where the State's water quality standards provide little specificity regarding the designated use and appropriate criteria, for example the use is "aquatic life" and there are no numeric criteria or procedures for interpreting the narrative, the State should consider refining the use designation to more specifically reflect the desired level of aquatic life for the particular water. The State will then be in a better position to select toxicity criteria (numeric or interpretations of the narrative) and test species and endpoints that match the designated use.

3. Where available, should the permitting authority consider biological assessments in determining the need for chronic WET limitations?

If available, the permitting authority should consider biological assessments, and any other relevant data in characterizing the effluent to determine whether the discharge will cause, or have reasonable potential to cause, or contribute to an excursion above a State water quality standard, including State narrative criteria for water quality. This is discussed in the EPA's 1991 guidance document, *Technical Support Document for Water Quality-Based Toxics Control* (TSD) on page 22 as follows:

To more fully protect aquatic habitats and provide more comprehensive assessments of aquatic life use nonattainment, EPA recommends that States fully integrate chemical-specific, whole effluent toxicity, and bioassessment approached into their water quality-based toxics control programs. It is EPA's position that the concept of "independent application" be applied to water quality-based situations. Since each method has unique as well as

overlapping attributes, sensitivities, and program applications, no single approach for detecting impact should be considered uniformly superior to any other approach. For example, the inability to detect receiving water impacts using a biosurvey alone is insufficient evidence to waive or relax a permit limit established using either of the other methods. The most protective results from each assessment conducted should be used in the effluent characterization process (See Chapter 3). The results of one assessment technique should not be used to contradict or overrule the results of the other(s).

Whenever there are discrepancies between the findings of the approaches, regulatory agencies may need to re-examine the findings to determine if simplifications or assumptions may have caused the difference. The State of Ohio found in 60 percent of the sites where they collected bioassessment data, a biological impact occurred when chemical-specific data predicted no impact. The reverse also can occur -- biosurveys may not show any impact in a stream whereas effluent data modeled at low flow project an exceedance of a chemical-specific criterion. In this instance, the regulatory authority may need to consider a more detailed monitoring and modeling of chemical fate and transport (which could include probabilistic modeling) to determine if simplification in dilution calculations projected higher concentrations than would be expected using the detailed model. The authority also would need to examine concurrently the sampling approach and analysis of the biosurvey data to determine if it appropriately characterized the water. If there was still a difference, then the regulatory authority will need to use the more protective approach as the basis to determine necessary regulatory control.

Thus, bioassessments provide useful information to augment data demonstrating problems with attainment of water quality standards, specifically, the "reasonable potential" evaluation about the need for a chronic toxicity limitation. Such data would not, however, "cancel out" conclusions about water quality

based on chemical-specific data or evaluation of ambient water using the whole effluent toxicity methods. Such bioassessment data is only one of many factors to evaluate in assessing whether the chemical-specific and WET data is representative of instream impacts.

4. Are different toxicity limitations for different seasons acceptable where the average flow for certain seasons is greater than other seasons (e.g. summer drought periods)?

NPDES permitting authorities have included seasonal limits for many years based on concerns about excursions of dissolved oxygen and ammonia standards. The Agency recently (September 1996) sent a letter out on this issue, reiterating current guidance (see attachment). Seasonal limits could be used for WET as well. As a general matter, however, the monitoring frequency associated with seasonal limits would need to be greater than with a single, fixed limit. Seasonally-variable WET limits, thus, would need to be developed with the commensurate level of monitoring, as explained more fully below. The base level of WET monitoring would need to be conducted over an entire year to build a baseline performance curve for the individual facility. As the variability of the limit increases (over the year), then the frequency of the monitoring should also increase.

The closer the limit is to the actual discharge and flow, the smaller the safety factor to protect the environment. For example, the permitting authority might consider that four monitoring events (over the course of a year) would be adequate to assess the WET of a discharge at a specific treatment level. If the treatment level of that discharge varies over the year (to meet different WET limits), then proportionally more frequent monitoring would be appropriate, for example, eight monitoring events when the permit has two different limits, sixteen monitoring events for four different limits, etc. Of course, the permit writer has some discretion in determining the appropriate monitoring frequency for the initial year (to develop the performance curve), as well as to reduce that frequency in subsequent years. This approach, however, is not intended to authorize "real time" permit limits for WET, specifically, limits that vary from day to day according to the actual measured instream flow that day.

5. Where toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) procedures have resulted in changes in effluent quality, should reasonable potential analyses be modified to reflect post-TIE/TRE effluent quality?

NPDES permit decisions should rely on valid representative data when assessing the reasonable potential for an effluent to cause or contribute to excursion of applicable water quality standards and in determining the types of limitations and or monitoring requirements to include in the permit. EPA encourages permittees and applicants to submit valid data that is representative of current operations at the facility. Where a facility is experiencing lower levels of toxicity and those lower levels are attributable to a discernable control action (and that control action will be maintained), EPA believes the new data set can be used to determine "reasonable potential" to reflect this change at the facility. EPA discourages continued reliance on data that is no longer representative of the facility's operations. The applicant for a permit (or permit modification), however, bears the responsibility for providing the most current data, while responsibility to act on such applications using that most recent data lies with the permitting authority.

Attachment

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