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EPA WHOLE EFFLUENT TOXICITY (WET) CONTROL POLICY

POLICY FOR THE DEVELOPMENT OF EFFLUENT LIMITATIONS IN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMITS TO CONTROL WHOLE EFFLUENT TOXICITY FOR THE PROTECTION OF AQUATIC LIFE

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POLICY FOR THE DEVELOPMENT OF EFFLUENT LIMITATIONS IN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMITS TO CONTROL WHOLE EFFLUENT TOXICITY (WET) FOR THE PROTECTION OF AQUATIC LIFE

INTRODUCTION

EPA is today publishing a national policy on the control of WET in NPDES permits. This policy is intended (i) to promote uniform, nationwide compliance with statutory and regulatory requirements for the control of WET, and (ii) to assist permit writers in implementing these requirements.

This policy reflects EPA's experience in implementing the regulations at 40 C.F.R. § 122.44(d)(1), which were originally published at 54 Fed. Reg. 23868 (June 2, 1989) (also referred to as "the water quality permitting regulations"). In part, this policy restates those regulations and reaffirms EPA's strong, continuing commitment to their prompt and complete implementation. The water quality permitting regulations, as well as the statutory provisions restated in this policy document, are fully binding on EPA Regions as well as States authorized to administer the NPDES program.

This policy also provides guidance to permit writers on implementation of the statutory and regulatory requirements for the control of WET.[1] EPA permit writers are expected to follow the portions of this policy that provide such 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. Similarly, EPA Regions will consider this policy in determining whether State-issued NPDES permits adequately implement the statutory and regulatory requirements for the control of WET.

This policy addresses some specific areas where questions have arisen regarding the implementation of statutory and regulatory requirements. It does not address all areas where the regulatory agency will exercise judgment in the implementation of statutory and regulatory requirements. For the questions addressed, it provides EPA's view as to the best course of action in most instances. This policy does not establish or affect legal rights or obligations and is not finally determinative of the issues addressed. Most importantly, nothing in this policy should be interpreted as providing any relief from the statutory and regulatory requirement that permits include conditions as necessary to assure attainment of water quality standards.

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[1] A brief summary of existing Agency policy and guidance addressing WET issues is contained in Appendix One to today's policy.

SUMMARY OF STATEMENTS OF POLICY

Eight statements of policy appear below. Explanations of each statement follow.

1. Basis for WET Controls

The permitting authority should evaluate WET water quality criteria attainment for acute WET at the edge of the acute mixing zone and for chronic WET at the edge of the chronic mixing zone except where the State has different requirements for evaluating WET criteria.[2] The permitting authority will develop WET effluent limitations based upon the more stringent of the acute or chronic criterion applied at the edge of the respective mixing zone, or, alternatively, on both.

2. Evaluation of Dischargers for Reasonable Potential

At a minimum, the permitting authority should review all major dischargers for reasonable potential to cause or contribute to exceedance of WET water quality criteria.

3. Evaluating Reasonable Potential

The permitting authority will consider available WET testing data and other information in evaluating whether a discharger has reasonable potential to cause or contribute to exceedance of WET water quality criteria.

4. Consequences of Establishing Reasonable Potential

Upon finding reasonable potential to cause or contribute to exceedance of WET water quality criteria, the permitting authority will impose effluent limitations to control WET.

5. Whole Effluent Toxicity Monitoring

Where appropriate, the permitting authority should impose WET monitoring conditions upon dischargers that do not have effluent limitations to control WET.

6. Compliance Schedules in NPDES Permits

Where allowed under State and federal law, NPDES permits may contain schedules for compliance with WET effluent limitations.

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[2]Throughout this policy, the term "WET water quality criteria" refers to State numeric water quality criteria for WET and State narrative water quality criteria for toxicity such as "no toxics in toxics amounts" in State water quality standards.

7. Whole Effluent Toxicity Controls and the Pollutants Ammonia and Chlorine

The requirements of the water quality permitting regulations apply without regard to the pollutant(s) that may be causing toxicity, including ammonia and chlorine.

8. Whole Effluent Toxicity Controls and Publicly Owned Treatment Works (POTWs)

The requirements of the water quality permitting regulations apply to all dischargers, including POTWs.

EXPLANATION OF STATEMENTS OF POLICY[3]

1. Basis for WET Controls

The permitting authority should evaluate WET water quality criteria attainment for acute WET at the edge of the acute mixing zone and for chronic WET at the edge of the chronic mixing zone except where the State has different requirements for evaluating WET criteria. The permitting authority will develop WET effluent limitations based upon the more stringent of the acute or chronic criterion applied at the edge of the respective mixing zone, or, alternatively, on both.

This policy statement describes the procedure permitting authorities should use to evaluate WET water quality criteria attainment and to develop effluent limitations to control WET. In the absence of more specific State requirements, EPA believes this approach most appropriately assures compliance with State water quality standards.[4],[5] The permitting authority must evaluate WET water quality criteria attainment according to the applicable State water quality standard(s). Permitting authorities should assess WET concentrations as diluted in the receiving water at the edge of the acute and chronic mixing zones

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[3]To aid the reader in using this policy, Appendix Two contains some background materials on WET testing, the State water quality standards process and WET, and federal statutory and regulatory requirements for development of water quality-based permit limitations for WET.

[4]State water quality standards or implementation procedures may (1) specify whether and how it is appropriate to account for dilution in establishing WET controls; (2) require the applicable criteria to apply at the outfall point of discharge or may contain a specific policy approved by EPA allowing or prohibiting mixing zones; as well as (3) specify exposure factors for WET which are relevant to the application of this policy statement, such as critical flow requirements for the receiving water, appropriate modeling techniques for determining the fate of the pollutant or pollutant parameter in stream, or required techniques for evaluating the mixing of the pollutant or pollutant parameter in the stream.

[5]NPDES permitting authorities traditionally measure compliance with effluent limitations at the outfall point of discharge. By issuing this policy statement, EPA does not intend to disturb this well-established permitting practice. Permitting authorities are familiar with procedures for determining the concentration of toxicity in-stream and establishing end-of-pipe effluent limitations on the basis of the information.

and apply the more stringent of the acute criterion at the edge of the acute mixing zone or the chronic criterion at the edge of the chronic mixing zone in developing WET effluent limitations. If there is uncertainty as to which of the two criterion so applied is more stringent for the discharge, however, the permitting authority will apply both.

The statement reflects the specific requirement of 40 C.F.R. § 122.44(d)(1)(ii) that "where appropriate, [the permitting authority will consider] the dilution of the effluent in the receiving water" in determining whether a discharge causes, has the reasonable potential to cause, or contributes to exceedance of WET water quality criteria. This statement should assist permitting authorities in establishing WET controls which meet the requirements of sections 301(b)(1)(C) and 402 of the Clean Water Act (CWA) and 40 C.F.R. § 122.44(d)(1).

40 C.F.R. § 122.44(d)(1)(iv) and (v) require the permitting authority to impose effluent limitations to control WET where it determines that a discharge causes, has the reasonable potential to cause, or contributes to exceedance of WET water quality criteria. 40 C.F.R. § 122.44(d)(1)(vii) also requires permitting authorities to establish effluent limitations on point sources which are consistent with the requirements of applicable State water quality standards. This is a basic premise of this policy statement. Where the applicable State water quality standard or implementation procedure requires a different basis for establishing WET controls, the permitting authority must follow applicable State requirements.[6]

The second component of the policy statement also reflects the principle of section 301(b)(1)(C) of the CWA that effluent limitations must assure compliance with all State water quality standards. Here, the permitting authority will establish WET controls for the particular discharge based upon the more stringent of the acute or chronic criterion (or both) applied at the edge of their respective mixing zones in order to achieve both criteria.

Consistent with this policy statement, the permitting authority will establish two independent zones for controlling

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[6]For example, some State water quality standards or implementation procedures do not allow mixing zones at all or restrict mixing zone use for certain dischargers. Where this is the case, the permitting authority will not use the procedure provided in policy statement one concerning the application of mixing zones. The permitting authority must still ensure that the permit includes WET limitations as necessary to achieve the applicable State requirements.

acute and chronic WET.[7] The first zone, the acute mixing zone, immediately surrounds the discharge outfall. The acute mixing zone is normally sized to prevent lethality (sometimes also described as "acute effects") to passing organisms. The permit must include effluent limitations as necessary to meet numeric or narrative water quality criteria for acute toxicity at the edge of the acute mixing zone. The second zone, the chronic mixing zone, is typically a larger zone which surrounds the acute mixing zone. The chronic mixing zone is normally sized to protect the ecology of the water body as a whole from all point-source related stresses including WET. The permit must include effluent limitations as necessary to meet numeric or narrative water quality criteria for chronic toxicity at the edge of the chronic mixing zone.[8]

Once it is determined what the appropriate mixing zones are, the permitting authority will take several additional steps consistent with this policy statement. The permitting authority will (1) evaluate the receiving water concentration of acute WET at the edge of the acute mixing zone and of chronic WET at the edge of the chronic mixing zone for the particular discharge, (2) determine which of the acute criterion or the chronic criterion applied at the edge of the appropriate mixing zone is the more stringent of the two for the particular discharge, and (3) establish effluent limitations to assure attainment of the more stringent criterion (or both where it is unclear which is more stringent). The Technical Support Document for Water Quality-based Toxics Control, as revised in March 1991 (EPA/505/2-90-001) (the TSD) at 3.3 and 5.4, illustrates how to apply this procedure

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[7]This policy does not address what is acute or chronic WET. 40 C.F.R. § 122.2 defines "whole effluent toxicity." Appendix Two, which provides an overview of the water quality standards process and WET, describes traditional acute and chronic toxicity tests and EPA's recommended magnitudes for acute and chronic WET. States may interpret narrative water quality criteria for toxicity in State implementation procedures. In the absence of such implementation procedures, EPA's recommended magnitudes for WET are .3 acute toxic unit and 1.0 chronic toxic unit at the edge of the appropriate mixing zone. Technical Support Document for Water Quality-based Toxics Control, as revised in March 1991 (EPA/505/2-90-001), at 2.3.3 and 2.3.4 (the TSD).

[8]The implementation of this policy requires permitting authorities to establish mixing zones unless State standards or implementation procedures direct otherwise; however, the specific size of a particular mixing zone depends on a variety of factors which can also be specified in the State water quality standard or implementation procedure. See generally the Water Quality Standards Handbook at 2-7 (1983); the TSD at 2.2.2, for discussions of this issue.

to evaluate a particular discharge for reasonable potential and to develop effluent limitations.

2. Evaluation of Dischargers for Reasonable Potential

At a minimum, the permitting authority should review all major dischargers for reasonable potential to cause or contribute to exceedance of WET water quality criteria.

40 C.F.R. §§ 122.44(d)(1)(iv) and (v) require permitting authorities to impose effluent limitations to control WET whenever a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion of applicable water quality criteria.[9] This policy statement identifies which dischargers the permitting authority should, as a first priority, assess for reasonable potential.[10]

The group of dischargers which the permitting authority should evaluate first for reasonable potential are "major" facilities. EPA defines a major POTW as a POTW having a design flow of one million gallons per day or greater, a service population of 10,000 or greater, or a significant impact on water quality. EPA identifies a major industrial discharger on the basis of a combination of factors, including size, toxic pollutant potential, and stream flow volume.[11] EPA believes that these facilities (either POTWs or industrial facilities) have the greatest opportunity for impacting surface water quality and therefore should be evaluated for "reasonable potential" to exceed an applicable State water quality standard.

Permitting authorities should continue to evaluate other dischargers of concern for reasonable potential to exceed WET water quality criteria. Factors which permitting authorities may consider in deciding whether a particular discharge is "of

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[9]Throughout this policy, any reference to "reasonable potential" includes both reasonable potential to cause and reasonable potential to contribute to an excursion of numeric water quality criteria for WET or narrative water quality criteria.

[10]This policy statement continues to reflect EPA's position on this matter articulated in the January 25, 1989, memorandum of Rebecca W. Hanmer, Acting Assistant Administrator for Water, to Regional Administrators entitled "Whole Effluent Toxicity Basic Permitting Principles and Enforcement Strategy."

[11]See the June 27, 1990, memorandum "New NPDES Non-Municipal Permit Rating System" from James R. Elder, Director of the Office of Water Enforcement and Permits, to Regional Water Management Division Directors, which is Appendix Three to today's policy.

concern" obviously would include those factors which are described in Chapter 3 of the TSD as factors for assessing reasonable potential (including WET data, chemical-specific data, instream survey data, industry or publicly owned treatment work type, compliance history, receiving water type, designated/existing uses, and dilution calculations). Under § 122.44(d)(1)(iv) and (v), permitting authorities must impose effluent limitations to control WET where reasonable potential is established. In addition, the permitting authority should consider WET controls, where appropriate, in issuing general permits.

3. Evaluating Reasonable Potential

The permitting authority will consider available WET testing data and other information in evaluating whether a discharger has reasonable potential to cause or contribute to exceedance of WET water quality criteria.

This policy statement describes what information is considered in evaluating whether a specific discharger has the reasonable potential to cause or contribute to excursion of WET water quality criteria. The permitting authority first determines whether valid WET testing data is available that is relevant to the particular discharge.[12] Whole effluent toxicity data may be available from previous monitoring. Additionally, under 40 C.F.R. § 122.21(j), certain POTWs are required to submit WET testing as part of the permit application. The permitting authority may also decide to require the permittee to generate WET data prior to permit issuance or as a condition of the permit. See policy statement five below. If valid WET testing data is available that is relevant to the particular discharge, the permitting authority uses this data to determine if the discharge exhibits reasonable potential under §§ 122.44(d)(1)(iv) or (v).[13] Where such WET data exist and demonstrate reasonable potential, the permitting authority does not need to gather or

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[12]The permitting authority determines whether available WET testing is valid and addresses concerns relative to toxicity for the particular discharge. For example, where a facility discharges to a low flow stream, submission of acute WET testing data showing no toxicity is insufficient (absent conversion of the acute results to chronic results using an acute-to-chronic ratio, as explained in the TSD) to assess reasonable potential for chronic toxicity.

[13]If additional factors also demonstrate reasonable potential (see main text discussion below), the permitting authority should also discuss these factors in the fact sheet or statement of basis accompanying the permit.

generate other information to verify or support the WET results. EPA believes it is appropriate to assess reasonable potential on the basis of WET testing. Whole effluent toxicity testing is comparable in precision to chemical analytical measurements in wide use. See discussions of these questions in 55 Fed. Reg. 30082, 30112-30115 (July 24, 1990); 54 Fed. Reg. 23868, 23874 (June 2, 1989); the TSD at 1.3 and 3.3.

The permitting authority should also consider whether other factors establish reasonable potential for the discharge. The TSD at 3.2 offers a discussion of factors other than facility-specific WET monitoring data which a permitting authority may consider in making a reasonable potential determination for a particular discharge. These factors include 1) industry type (primary, secondary, raw materials used, products produced, best management practices, control equipment, treatment efficiencies, etc.), 2) publicly owned treatment work type (pretreatment, industrial loadings, number of taps, unit processes, treatment efficiencies, chlorination/ammonia problems, etc.), 3) compliance history, 4) existing chemical data from discharge monitoring reports and applications, 5) available instream survey data, 6) receiving water type and designated/existing uses, 7) available dilution, etc. For each individual permit, the permitting authority must include a clear explanation in the statement of basis or fact sheet accompanying the permit of the specific factors considered in evaluating reasonable potential for the particular discharge.

EPA believes this approach to assessing reasonable potential implements the requirements of sections 301(b)(1)(C) and 402 of the CWA and 40 C.F.R. § 122.44(d)(1). 40 C.F.R. § 122.44(d)(1)(ii), (iv), and (v) require the permitting authority to use valid procedures which account for at least the following four factors in establishing whether a discharge causes, has the reasonable potential to cause, or contributes to an exceedance of WET water quality criteria: (1) existing controls on point and nonpoint sources of pollution, (2) the variability of the pollutant or pollutant parameter in the effluent, (3) the sensitivity of the test species when evaluating WET, and (4) the dilution of the effluent in the receiving water where appropriate. 40 C.F.R. § 122.44(d)(1)(v) also explicitly provides that the permitting authority must establish an effluent limitation to control WET where it determines, using "toxicity testing data, or other information," that the discharge causes, has the reasonable potential to cause, or contributes to an exceedance of a narrative water quality criterion.

4. Consequences of Establishing Reasonable Potential

Upon finding reasonable potential to cause or contribute to exceedance of WET water quality criteria,

the permitting authority will impose effluent limitations to control WET.

This policy statement reiterates the requirements of sections 301(b)(1)(C) and 402 of the CWA as well as 40 C.F.R. §§ 122.44(d)(1)(iv) and (v). 40 C.F.R. §§ 122.44(d)(1)(iv) and (v) require the permitting authority to establish effluent limitations in a permit to control WET where it determines that a discharge has the reasonable potential to cause or contribute to an instream excursion above a numeric criterion for WET or a narrative criterion.[14]

The permitting authority can either modify the permit or reissue the permit upon expiration, as appropriate, to incorporate effluent limitations to control WET. In no instance will the permitting authority reissue the permit without including appropriate effluent limitations to control WET. In appropriate cases, the permitting authority may also require the discharger to conduct a toxicity identification evaluation/toxicity reduction evaluation to identify and eliminate the cause of the toxicity as part of a compliance schedule to comply with effluent limitations to control WET.

5. Whole Effluent Toxicity Monitoring

Where appropriate, the permitting authority should impose WET monitoring conditions upon dischargers that do not have effluent limitations to control WET.

Where appropriate, the permitting authority should impose WET monitoring conditions upon those dischargers for which it did not determine reasonable potential and did not impose effluent limitations to control WET. Where the permitting authority concludes that a continued monitoring requirement is warranted based upon the particular circumstances of the discharger, the permitting authority should require WET monitoring for a reasonable period of time and evaluate the monitoring results at the conclusion of this period.[15]

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[14]Paragraph (v) provides that where the permitting authority determines that a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative water quality criterion, the permit must contain (1) a WET effluent limitation or (2) a pollutant-specific limitation, where the permitting authority demonstrates that a pollutant-specific limitation is sufficient to attain and maintain applicable numeric and narrative water quality standards.

[15]40 C.F.R. § 122.21(j) requires many new and existing POTWs to collect WET data for submission to the permitting authority at time of application or reapplication for an NPDES permit. Where

EPA and authorized NPDES States have broad authority under the CWA to require continued monitoring to assure attainment of water quality criteria. Under sections 308 and 402 of the CWA, EPA or a State with an authorized NPDES program can require NPDES permittees to provide WET testing data to assure State water quality standards will be attained and maintained. The permitting authority can impose a requirement on the discharger to collect monitoring data through conditions in the NPDES permit or through CWA section 308 letters. Under sections 301(b)(1)(C) and 402 of the CWA as well as 40 C.F.R. §§ 122.44(d)(1)(iv) and (v), EPA or a State with an authorized NPDES program must impose effluent limitations to control WET where continued monitoring results in a determination of reasonable potential to exceed WET water quality criteria.

6. Compliance Schedules in NPDES Permits

Where allowed under State and federal law, NPDES permits may contain schedules for compliance with WET effluent limitations.

This policy statement reflects the principles for allowing compliance schedules in NPDES permits which were articulated in In re Star-Kist Caribe, Inc., NPDES Appeal No. 88-5 (May 26, 1992) (order denying modification request).[16] Section 301(b)(1)(C) of the CWA establishes a deadline of no later than July 1, 1977, for compliance with effluent limitations developed to meet State water quality standards. In light of this CWA provision, EPA has determined that all permits must reflect this deadline, unless the following requirements are met.[17] NPDES permits may contain schedules of compliance beyond July 1, 1977, to meet water quality-based effluent limitations if two requirements are met. The two requirements are: 1) the permit

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appropriate, the permitting authority may, in its discretion, require more frequent WET monitoring of POTWs or industrial dischargers. For example, it may be appropriate to impose a continued WET monitoring obligation upon a major industrial discharger for which WET testing data is not available. Similarly, it may be appropriate to impose a monitoring obligation upon a discharger for which available WET data is limited or for which later information raises the possibility of reasonable potential.

[16]40 C.F.R. § 122.2 defines a "schedule of compliance" as a "schedule of remedial measures included in a 'permit', including an enforceable sequence of interim requirements . . . leading to compliance with the CWA and regulations."

[17]This entire discussion does not apply to permit limitations which are governed by section 304(l) of the CWA.

effluent limitation must be based either on a post-July 1, 1977 State water quality standard or a new or revised interpretation of a pre-July 1, 1977 State water quality standard; and (2) the applicable State water quality standard or implementing regulations must explicitly authorize schedules of compliance.

40 C.F.R. § 122.47 also governs compliance schedules in NPDES permits. The regulation authorizes, where appropriate, schedules requiring compliance with effluent limitations as soon as possible and no later than the applicable CWA statutory deadline. The regulation imposes certain restrictions on allowing schedules of compliance for new sources, new dischargers, and recommencing dischargers. The regulation establishes requirements for interim dates for certain schedules of compliance and for permittee reporting. Any compliance schedules developed for WET limitations must also satisfy § 122.47, if applicable.

Thus, to decide whether to allow a compliance schedule in an NPDES permit for effluent limitations to control WET, the permitting authority must answer these questions:

1. **Was the applicable State water quality criterion promulgated or interpreted after July 1, 1977?**

At this time, most permitting authorities establish effluent limitations to control WET on the basis of State narrative water quality criteria. Most State narrative water quality criteria for toxicity were adopted before July 1, 1977. Where this is the case, the permitting authority can only allow a schedule of compliance in the NPDES permit where the State has made a new or revised interpretation of the applicable narrative water quality criterion after July 1, 1977. Where the permitting authority establishes an effluent limitation to control WET on the basis of a State numeric water quality criterion for WET, it is more likely that the criterion is a post-July 1, 1977 criterion.

2. **Do the State water quality standards or implementing regulations explicitly authorize schedules of compliance?**

The State must include an explicit statement authorizing compliance schedules in the State water quality standard or implementing regulations. If the State water quality standard or implementing regulations are silent on whether schedules of compliance are authorized for NPDES permits, the permitting authority cannot place a schedule of compliance in the NPDES permit. Permit writers may find the express authorization in the State statute or water quality standards, water quality planning, or NPDES regulations.

3. **Do other relevant provisions of State or federal law or policy allow the schedule of compliance?**

Here, for example, the permitting authority should consider whether allowing a schedule of compliance for the specific discharge meets the requirements of 40 C.F.R. § 122.47, if applicable, or any other requirements of State law.

Where the permitting authority answers yes to each of these questions, it may allow a schedule of compliance in the NPDES permit.

The permitting authority, however, is not compelled to establish a schedule of compliance in the NPDES permit where so authorized. The permitting authority should impose a schedule of compliance only where appropriate under the specific conditions of discharge. It has long been EPA's policy that EPA and authorized NPDES States should require compliance with State water quality standards as soon as possible in order to further the goals of the CWA.

7. Whole Effluent Toxicity Controls and the Pollutants Ammonia and Chlorine

The requirements of the water quality permitting regulations apply without regard to the pollutant(s) that may be causing toxicity, including ammonia and chlorine.

This policy statement is designed to address several questions which permitting authorities have encountered in establishing WET controls where ammonia or chlorine is the primary cause of toxicity. The questions typically arise on the following set of facts: A permittee discharges to a stream for which the State has not established numeric water quality criteria for ammonia or chlorine; the State has adopted a narrative water quality criterion for toxicity which is applicable to the stream; the permittee conducts WET monitoring; and the permittee exceeds the narrative criterion due to ammonia or chlorine. The permitting authority must answer several questions in permitting this discharge: What effluent limitations must it establish in the permit? Will the permitting authority require the permittee to control ammonia or chlorine, so that the permittee does not exceed the narrative criterion due to ammonia or chlorine? Is there a basis to treat ammonia or chlorine differently from other pollutants in applying § 122.44(d)(1) to these facts?

The requirements of § 122.44(d)(1) apply to all pollutants and pollutant parameters, including ammonia and chlorine. The Agency sees no basis upon which to treat WET due to ammonia or chlorine differently from WET due to other pollutants in applying

the requirements of 40 C.F.R. § 122.44(d)(1) or other provisions of federal law.[18] Several provisions of 40 C.F.R. § 122.44(d)(1) provide the answers to the questions posed in this policy statement.

40 C.F.R. § 122.44(d)(1)(v) requires the permitting authority to establish effluent limitations to control WET which causes, has the reasonable potential to cause, or contributes to an excursion above a State narrative water quality criterion. Under § 122.44(d)(1)(v), the permitting authority must establish either a WET effluent limitation designed to meet the narrative criterion or a pollutant-specific effluent limitation where the permitting authority is satisfied it will assure compliance with applicable narrative and numeric criteria to control the WET due to ammonia or chlorine. 40 C.F.R. § 122.44(d)(1)(vi) allows the permitting authority to use one of three options for developing effluent limitations for a pollutant determined to cause an exceedance of a State narrative criterion where the State has developed no numeric water quality criterion for the specific pollutant. These options are (1) establish an effluent limitation using a calculated numeric water quality criterion which will attain and maintain the applicable narrative criteria and fully protect the designated use; (2) establish an effluent limitation on a case-by-case basis using EPA criteria supplemented by other relevant information where necessary; and (3) establish an effluent limitation for an indicator parameter provided certain factors are established.

8. Whole Effluent Toxicity Controls and POTWs

The requirements of the water quality permitting regulations apply to all dischargers, including POTWs.

This policy statement reaffirms EPA's longstanding policy of treating all dischargers on an equal basis in imposing and enforcing effluent limitations to control all pollutants and pollutant parameters. Under sections 301(b)(1)(C) and 402 of the

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[18]This policy statement does not mean that permitting authorities may disregard technical factors which are unique to ammonia and chlorine in implementing regulatory requirements. For example, holding pH constant in the laboratory during a WET test may be necessary to assure a representative WET sample, where WET is due to ammonia. The permitting authority may also use judgment in interpreting testing results and setting limits where temperature has a significant impact upon WET, which may be the case for ammonia discharges during winter. In addition, the permitting authority may require WET testing prior to chlorination if a facility is under a schedule to dechlorinate. Once dechlorination is implemented, then WET testing should be conducted on the final effluent.

CWA as well as 40 C.F.R. § 122.44(d)(1), all dischargers must meet effluent limitations designed to attain and maintain applicable State water quality standards. Under the current NPDES program, EPA exercises enforcement discretion where appropriate for particular violations of effluent limitations designed to meet State water quality standards, and provides technical guidance and support to dischargers in seeking solutions to water quality-permitting and compliance problems. See Attachment 2 to the January 25, 1989, memorandum from Rebecca W. Hanmer, Acting Assistant Administrator for Water, to EPA Regional Administrators entitled "Whole Effluent Toxicity Basic Permitting Principles and Enforcement Strategy." EPA's Enforcement Management System for the National Pollutant Discharge Elimination System (1989) also discusses how EPA exercises such enforcement discretion.

Authorized NPDES States and EPA will work with municipalities (as well as other permittees) to solve water quality-related problems, including those resulting from WET. In 1991, EPA published the revised TSD, which provides comprehensive technical guidance for assessing and regulating the discharge of toxic substances to the waters of the United States. In 1989, the Agency published a specific toxicity reduction manual for the municipal discharger, the Toxicity Reduction Evaluation Protocol for Municipal Wastewater Treatment Plants (EPA 600/2-88/062 April 1989). Since 1985, EPA's National Effluent Toxicity Assessment Center in Duluth, Minnesota has provided assistance to regulatory authorities in connection with dischargers that have complex toxicity problems. EPA has published the Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I (EPA-600/6-91/005F) (May 1992), a guidance document designed to assist dischargers and their consultant laboratories in conducting chronic aquatic toxicity identification evaluations.

CONCLUSION

The fundamental premises of today's policy are not new. Because of the importance of WET controls, however, EPA is taking this opportunity to reiterate key principles associated with implementation of existing statutory and regulatory requirements for WET. The publication of this policy is designed to foster consistent nationwide compliance with existing statutory and regulatory provisions for the control of WET, to facilitate the development of appropriate controls for WET in NPDES permits, and to help assure attainment of water quality standards throughout the nation.

APPENDIX ONE

HISTORY OF FEDERAL REGULATION OF WHOLE EFFLUENT TOXICITY (WET)

Since 1984, the Environmental Protection Agency, the States, and the regulated community have employed an integrated strategy consisting of both biological and chemical means to control toxic effects upon water quality beyond Clean Water Act (CWA) technology-based requirements in order to achieve and maintain State water quality standards. One method for measuring the biological effects of toxic effluents upon aquatic life is WET testing. EPA and the States have used the data derived from WET testing to assess compliance with State water quality standards and to establish National Pollutant Discharge Elimination System (NPDES) permit effluent limitations necessary to attain and maintain those standards.

In the past ten years, the Agency has published regulations, policy statements, and guidance documents which address a variety of issues associated with WET controls in NPDES permits. In 1984, EPA issued the "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants" (published at 49 Fed. Reg. 9016 (March 9, 1984)). This policy addresses the use of biological and chemical methods to assure that toxic whole effluent discharges are regulated consistent with federal and State requirements. The document discusses such specific issues as integration of chemical and biological approaches; chemical, physical, and biological testing requirements (WET requirements); use of data; setting of effluent limitations; and monitoring.

On January 25, 1989, Rebecca W. Hanmer, Acting Assistant Administrator for Water, sent to EPA Regional Administrators the memorandum entitled "Whole Effluent Toxicity Basic Permitting Principles and Enforcement Strategy." A group of Regional and State representatives developed the strategy, which discussed the minimum acceptable national requirements for WET permitting.

In 1989, the Agency revised existing 40 C.F.R. § 122.44(d)(1), which previously required NPDES permits to contain any more stringent requirements necessary to achieve State water quality standards. See 54 Fed. Reg. 23868 (June 2, 1989). The revised regulation described in greater detail requirements for NPDES permitting authorities to follow in developing NPDES effluent limitations to assure compliance with State water quality standards. On August 14, 1992, Michael B. Cook, Director, Office of Wastewater Enforcement and Compliance, and Robert H. Wayland, III, Director, Office of Wetlands, Oceans and Watersheds, transmitted a memorandum to the Water Management Division Directors, Regions I-X, entitled "Clarifications Regarding Certain Aspects of EPA's Surface Water Toxics Control Regulations." (See Appendix Four.) In 1990, EPA also published new 40 C.F.R. § 122.21(j), which established a requirement for

certain publicly owned treatment works (POTWs) to provide the results of valid WET testing with applications for NPDES permits. See 55 Fed. Reg. 30082 (July 24, 1990). The preambles to these regulatory revisions and the 1984 policy provide a detailed explanation of legal and policy support for WET testing and effluent limitations.

Since 1984, the Agency has published various guidance documents which address the subject of water quality-based toxics control, including WET control. See, in particular, the Technical Support Document for Water Quality-based Toxics Control, which was originally published in September 1985 and was revised in March 1991 (EPA/505/2-90-001) (the TSD). The revised TSD provides an explanation of the technical support for WET testing and gives detailed guidance on development of water quality-based permit limitations for WET and toxic pollutants.

On June 19, 1991, EPA issued the "Policy on the Use of Biological Assessments and Criteria in the Water Quality Program." In discussing integration of various assessment methods, the 1991 policy reflects a position of "independent application." In essence, "independent application" means that appropriate regulatory action should be taken when any one of biosurvey, pollutant-specific, or WET testing methods indicates that an applicable water quality standard is not attained.

APPENDIX TWO

BACKGROUND MATERIALS ON WHOLE EFFLUENT TOXICITY (WET) TESTING, THE STATE WATER QUALITY STANDARDS PROCESS AND WET, FEDERAL STATUTORY AND REGULATORY REQUIREMENTS FOR WET, AND WET REDUCTION GUIDANCE

Overview of WET Testing for Aquatic Life Protection

The WET approach to toxics control for the protection of aquatic life involves the use of acute and chronic WET testing to measure the toxicity of wastewaters. Whole effluent toxicity tests typically use standardized, surrogate freshwater or marine plants, vertebrates, or invertebrates to measure the aggregate toxic effect of an effluent. An acute WET test is typically a test of 96-hours or less in duration in which lethality is the measured endpoint. A chronic WET test is typically a longer-term test in which sublethal effects, such as fertilization, growth, and reproduction can be measured in addition to lethality. On December 4, 1989, EPA published proposed Part 136 methods for conducting short-term acute and chronic WET testing for marine and freshwater species. See 54 Fed. Reg. 50216. Once these methods are final, they will constitute approved Part 136 test methods for the NPDES program.

Overview of the State Water Quality Standards Process and WET

Section 303 of the Clean Water Act (CWA) establishes the statutory basis for the current State water quality standards program. Under this provision of the CWA, States bear primary responsibility for adopting water quality standards. State water quality standards represent the means by which EPA and authorized NPDES States control point source discharges when technology-based controls for point source discharges are inadequate.

A water quality standard defines the water quality of a water body by designating the uses to be made of the water, by setting criteria necessary to protect the uses, and by establishing antidegradation policies and implementation procedures that serve to maintain and protect water quality. See section 303(c) of the CWA and 40 C.F.R. Part 131. States adopt water quality standards to protect public health or welfare, enhance the quality of the water, and serve the purposes of the CWA. Among other requirements, State water quality criteria must protect aquatic life.

Under section 303 of the CWA and 40 C.F.R. Part 131, EPA must approve State water quality standards or disapprove State water quality standards and overpromulgate with federal water quality standards. State water quality standards are effective until EPA overpromulgates with federal standards. Once

promulgated, the federal standards are the applicable water quality standards for the State.

State water quality criteria may be expressed as constituent numeric concentrations of pollutants or pollutant parameters or as narrative statements representing a quality of water that supports a particular use. This is true of the pollutant parameter WET. Several States have adopted numeric criteria for WET. Most evaluation and control of WET at this time, however, is based upon maintenance of the State's designated uses for the water body through basic narrative water quality criteria for toxicity. All States have narrative criteria for toxicity which are statements of a desired water quality goal, such as "all State waters must, at all times and flows, be free from substances that are toxic to humans or aquatic life." EPA considers narrative criteria to apply to all designated uses at all flows unless specified otherwise in the State's water quality standards. EPA regards narrative criteria for toxicity to cover both short-term and long-term WET effects (acute and chronic effects, respectively).

Section 303(d) of the CWA establishes requirements for determining the specific pollutant reductions necessary to attain water quality standards. Under section 303(d), the State (or, upon the failure of the State, EPA) must establish a Total Maximum Daily Load (TMDL) for water quality-limited waters. A TMDL is an estimate of the total loading of a pollutant or pollutant stressor that may be allowed within a receiving water and an allocation of the total loading between the sources. See 40 C.F.R. Part 130. A TMDL consists of Wasteload Allocations for point sources, Load Allocations for other sources, and a Margin of Safety to account for uncertainty in the relationship between loadings and water quality. EPA has issued program guidance and revised regulations pursuant to section 303(d) (see Guidance for Water Quality-based Decisions: The TMDL Process (EPA 440/4-91-001 April 1991); 57 Fed. Reg. 33040-33050 (July 24, 1992); and April 13, 1992, memorandum from Geoffrey H. Grubbs, Director, Assessment and Watershed Protection Division, Office of Wetlands, Oceans and Watersheds, entitled "Supplemental Guidance on Section 303(d) Implementation"). TMDLs may be developed for a single source to support the issuance of an NPDES permit or for a larger water body when multiple sources need to be considered together.

State implementation procedures may further explain how the State implements the applicable narrative criterion to establish effluent limitations to control WET. Many effluent limitations to control WET, however, result from the permitting authority's case-by-case determination of what concentration of WET meets the narrative criterion.

State WET criteria or the procedures implementing the State criteria typically describe the magnitude, duration, and return

frequency for WET. The duration and frequency of the discharge may also be defined by the design stream flow appropriate to the criterion. Magnitude is the maximum allowable concentration of WET, which is typically expressed as a concentration of toxicity instream; duration is the period of time over which the instream concentration is averaged for comparison with criteria concentrations, in order to limit the durations of concentrations above the criterion; and return frequency is a designation of how often the criterion may be exceeded without impacting the organisms in the water body. This information is needed because ambient water quality typically varies in response to changes in effluent quality, stream flow, and other factors. Accordingly, organisms in the receiving water typically experience fluctuating exposure to pollutants, including some periods of exposure to high pollutant concentrations, which may have adverse effects. For this reason, criteria indicate a time period over which exposure is to be averaged, as well as a maximum concentration, thereby limiting the duration of exposure to elevated concentrations. In addition, to predict or ascertain the attainment of criteria it is necessary to specify the allowable frequency for exceeding the WET criteria. The permitting authority uses the magnitude, duration, and return frequency provisions of WET criteria to develop wasteload allocations and effluent limitations to control the WET of the discharge.

Whole effluent toxicity criteria as adopted by the State or as implemented by the permitting authority on a case-by-case basis typically consist of two expressions of magnitude of toxicity to surrogate test species, one to protect against acute toxicity effects and one to protect against chronic toxicity effects, along with a duration and return frequency for each. As of the publication date of this policy, EPA has not developed a recommended section 304(a) criterion for WET. The Technical Support Document for Water Quality-based Toxics Control, which was originally published in September 1985 and was revised in March 1991 (EPA/505/2-90-001) (the TSD), contains recommended magnitudes, durations, and return frequencies for assessing acute WET (.3 acute toxic unit to the most sensitive of at least three species, with an averaging period of one hour and a once in three-year return frequency) and chronic WET (1.0 chronic toxic unit to the most sensitive of at least three species, with an averaging period of 4 days and a once in three-year return frequency). See the TSD at 2.3.3 to 2.3.5.

At their discretion, States may adopt certain policies for implementation of water quality standards, such as critical low flow and mixing zone policies. EPA has the authority to review and approve or disapprove such policies. See 40 C.F.R. § 131.11. Additionally, EPA and States may establish a Technical Agreement describing procedures that will be used in developing TMDLs and wasteload allocations. TMDLs, wasteload allocations, and permit limitations developed consistent with Technical Agreements are

subject to a lesser degree of EPA review. State water quality standards protect water quality for designated uses in critical low flow situations. Under § 131.13, States may designate critical low flows below which numeric water quality criteria do not apply. Mixing zones are small areas in the receiving water near certain discharge outfalls where ambient concentrations above the otherwise applicable State water quality criteria are allowed. See generally the Water Quality Standards Handbook at 2-7 (1983); the TSD at 2.2.2. Some States prohibit mixing zones entirely for all pollutants or pollutant parameters. Others may allow mixing zones in general, but provide spatial dimensions to limit the areal extent of the mixing zones. Permitting authorities may allow mixing zones on a case-by-case basis for individual discharges. EPA strongly recommends that States have a definitive statement in their water quality standards on whether or not mixing zones are allowed and clearly explain the procedures for defining mixing zones where allowed.

Overview of Federal Statutory and Regulatory Requirements for Development of Water Quality-based Permit Limitations for WET

Section 101(a) of the CWA establishes a national policy of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. In addition, section 101(a)(3) of the CWA states the national policy that the discharge of toxic pollutants in toxic amounts is prohibited. Under sections 301 and 402 of the CWA, point source dischargers must obtain an NPDES permit before discharging into waters of the United States. Under sections 301(b)(1)(C) and 402 of the CWA, dischargers with NPDES permits must meet all of the technology-based requirements of the CWA as well as any more stringent requirements necessary to achieve State water quality standards established under section 303 of the CWA.

In 40 C.F.R. § 122.2, EPA defines "whole effluent toxicity" as "the aggregate toxic effect of an effluent measured directly by a toxicity test." EPA has published 40 C.F.R. § 122.44(d)(1), which describes requirements for NPDES permitting authorities to follow in developing water quality-based effluent limitations, including those necessary to control WET. The regulation consists of seven subparagraphs:

1. Section 122.44(d)(1)(i)

> "Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.

2. Section 122.44(d)(1)(ii)

"When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water."

3. Section 122.44(d)(1)(iii)

"When the permitting authority determines, using the procedures in paragraph (d)(1)(ii) of this section, that a discharges causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the allowable ambient concentration of a State numeric criteria within a State water quality standard for an individual pollutant, the permit must contain effluent limits for that pollutant."

4. Section 122.44(d)(1)(iv)

"When the permitting authority determines, using the procedures in paragraph (d)(1)(ii) of this section, that a discharges causes, has the reasonable potential to cause, or contributes to an in-stream excursion above the numeric criterion for whole effluent toxicity, the permit must contain effluent limits for whole effluent toxicity."

5. Section 122.44(d)(1)(v)

"Except as provided in this subparagraph, when the permitting authority determines, using the procedures in paragraph (d)(1)(ii) of this section, toxicity testing data, or other information, that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative criterion within an applicable State water quality standard, the permit must contain effluent limits for whole effluent toxicity. Limits on whole effluent toxicity are not necessary where the permitting authority demonstrates in the fact sheet or statement of basis of the NPDES permit, using the procedures in paragraph (d)(1)(ii) of this section, that chemical-specific limits for the effluent are sufficient to

attain and maintain applicable numeric and narrative State water quality standards."

6. Section 122.44(d)(1)(vi)

"Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options:

(A) Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or

(B) Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or

(C) Establish effluent limitations on an indicator parameter for the pollutant of concern, provided:

(1) The permit identifies which pollutants are intended to be controlled by the use of the effluent limitation;

(2) The fact sheet required by § 124.56 sets forth the basis for the limit, including a finding that compliance with the effluent limit on the indicator parameter will result in controls on the pollutant of concern which are sufficient to attain and maintain applicable water quality standards;

(3) The permit requires all effluent and ambient monitoring necessary to show that during the term of the permit the limit on the indicator parameter continues to attain and maintain applicable water quality standards; and

(4) The permit contains a reopener clause allowing the permitting authority to modify or revoke and reissue the permit if the limits on the indicator parameter no longer attain and maintain applicable water quality standards."

7. Section 122.44(d)(1)(vii)

"When developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that:

(A) The level of water quality to be achieved by limits on point sources established under this paragraph is derived from, and complies with all applicable water quality standards; and

(B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7."

Overview of Toxicity Reduction Guidance

The purpose of a toxicity reduction evaluation (TRE), including a toxicity identification evaluation (TIE), is to investigate the causes and determine corrective actions for WET problems. The permitting authority may require the permittee to conduct these evaluations in specific cases. Section 5.8 of the TSD contains a detailed discussion of EPA's recommended approach for conducting TIEs and TREs, including a list of guidance documents EPA has developed describing methods and procedures for conducting TIEs and TREs.