Whole Effluent Toxicity (WET) Strategy – April 2001

According to Georgia's Reasonable Potential Procedures, the Environmental Protection Division (EPD) will review the most recent five years of WET data when determining whether or not a WET limit needs to be included in a permit.

Currently, major industrial and municipal facilities are required to conduct a chronic WET test and submit it with their permit applications. The WET tests are to be conducted in accordance with the document "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms," Third Edition, EPA 600-4-91-002 (July 1994) or "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms," Second Edition, EPA-600-4-91-003 (July 1994) or the most recently approved EPA manual. These tests are to be run using a vertebrate and an invertebrate species (normally P. promelas and C. dubia). The tests are to be definitive and should include a dilution equal to the facility's instream wastewater concentration (IWC). Data are to be analyzed according to the procedures indicated in the above referenced manuals and the No Observed Effect Concentration (NOEC) and Lowest Observed Effect Concentration (LOEC) are to be calculated and reported. An effluent discharge will not be considered to be toxic if the NOEC is greater than or equal to the IWC. If the NOEC is less than the IWC, then instream toxicity from the effluent will be considered as having been predicted and the effluent will be considered to be toxic to aquatic organisms in the receiving stream.

While generally only chronic WET testing has been required, upon EPA approval of this WET Strategy, EPD will begin requiring acute WET testing in permits instead of chronic testing when a facility's IWC is less than 1% effluent (except in the case where a diffuser is present). The acute tests are to be conducted in accordance with the document "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fourth Edition, EPA/600/4-90/027F, August 1993" or the most recently approved EPA manual. These tests are to be run using a vertebrate and an invertebrate species (normally P. promelas and C. dubia). The tests are to be definitive. Data are to be analyzed according to the procedures indicated in the above reference manual and the LC50 is to be reported. An effluent discharge will not be considered to be toxic if the LC50 is greater than or equal to 100% effluent.

As stated above, the results of the last five years of WET data will be evaluated when a permit comes up for reissuance. If any of the WET tests indicate that the effluent is toxic, then a WET limit will be placed in the permit. The only exceptions to this are if the results of the failed WET tests were determined to be invalid or questionable or if the reason for the failure is known and limits for chemical constituents will provide protection. Some examples of what constitutes an invalid or questionable test are those that do not meet the minimum acceptability criteria and those where an unexpected dose-response curve results and it is determined that further testing is needed. (These examples are not all inclusive). EPD will not use the results of invalid tests to determine reasonable potential. Tests determined to be questionable based on

If this is the first time a facility gets a WET limit and the data indicates that it can't meet the limit, the permit will be issued with a permit compliance schedule which will give the permittee time to attain compliance with the WET limit (generally 3 years). The schedule will contain a condition to submit a toxicity reduction evaluation (TRE) schedule three months from the date of permit issuance. The TRE will basically include a summary of what action the permittee plans to take to eliminate toxicity from the effluent. This may include things such as a survey of industries that discharge to the plant to try to identify potential sources of toxicity, an evaluation of "housekeeping" at the facility which may include an evaluation of the potential toxicity of chemicals added at the treatment plant, the performance of additional priority pollutant scans, and a toxicity identification evaluation. The compliance schedule will also require the permittee to conduct WET tests every quarter. The quarterly testing requirement will remain in effect until such time that the permittee passes two WET tests in a row (the tests must be conducted at least 30 days apart) and EPD gives the permittee permission to begin testing at the frequency listed on the limits page in the permit (generally annually). Finally, the compliance schedule will require the permittee to submit a report to EPD every nine months to report on the progress that they have made in attaining compliance with the WET limit. Any plant modifications that are proposed to remove toxicity w ill have to be approved by EPD before construction begins. Failure to attain compliance with the WET limit by the final compliance date in the compliance schedule will be handled through enforcement action. Should a facility attain compliance with its WET limit before its 36 month compliance schedule is over (passed 2 consecutive WET tests as discussed above) and EPD gives the facility permission to begin WET testing less frequently than the compliance schedule requires, then the facility will become subject to the WET limit in the permit at this time and any future failures would be considered to be an enforcement issue.

Minimum Data Requirements for Determining Reasonable Potential

As stated above, EPD currently requires major industrial and municipal facilities to conduct a chronic WET test and submit it with their permit applications. This test is reviewed along with any others conducted within the last 5 years to determine reasonable potential. It may be the case that the only WET test done in the last 5 years is the one submitted with the application. In this case, EPD has been basing its Reasonable Potential Determinations based on one test. EPD is planning to require more frequent WET testing in the near future. A table showing what the minimum WET testing requirements will be for different types of NPDES facilities is included below.

EPD is about to begin using the EPA's new permit application for municipal facilities (EPA Form 3510-2A). The new application requires more extensive WET testing for certain facilities. Specifically, publicly owned treatment works (POTWs) with a design flow rate greater than or equal to 1.0 MGD; POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); or any POTW that already has a WET limit or WET monitoring requirement in its permit will be required to submit a year of quarterly WET testing with the permit application. In place of the quarterly testing, the permittee may submit the results from four tests performed

things such as unexpected dose response curves may be used or may be thrown out. Each test will have to be evaluated individually. EPD may require further WET testing if there are not a sufficient number of valid WET tests to determine Reasonable Potential. An example of knowing the cause of toxicity would be if it was known that total residual chlorine was the cause of the observed toxicity. In this case, a total residual chlorine limit could be given in place of a WET limit.

When applicable, the WET limit will be written as follows:

a) if the IWC $\geq$ 1% Effluent

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Chronic Whole Effluent Toxicity (WET) Testing	NOEC $\geq$ IWC*		Annually	Composite	Effluent

*WET limit - The No Observed Effect Concentration (NOEC) is greater than or equal to the Instream Wastewater Concentration (IWC) of ____%. Definitive tests must be run on the same samples concurrently using both Ceriodaphnia dubia and Fathead minnows (Pimephales promelas). The testing must incorporate the most current U.S. EPA chronic aquatic toxicity testing manuals.

b) If the IWC < 1% effluent (if a diffuser is present a chronic limit will be given instead)

Parameter	Discharge Limitations mg/l (kg/day) unless otherwise specified		Monitoring Requirements		
	Monthly Avg.	Weekly Avg.	Measurement Frequency	Sample Type	Sample Location
Acute Whole Effluent Toxicity (WET) Testing	LC50 $\geq$ 100% effluent*		Annually	Composite	Effluent

*WET limit - Lethal Concentration 50% must be greater than or equal to 100% effluent. Definitive tests must be run on the same samples concurrently using both Ceriodaphnia dubia and Fathead minnows (Pimephales promelas). The testing must incorporate the most current U.S. EPA acute aquatic toxicity testing manuals.

at least annually in the four and one-half years prior to the application. This means that EPD will have a minimum of four WET tests to determine Reasonable Potential with for the POTWs in the categories mentioned above. EPD plans to begin using the new permit application when permitting by basin begins in 2003 with the Chattahoochee and Flint river basins.

In addition to the extra requirements for the specific POTWs listed above, EPD will also begin requiring major industrial facilities to conduct one WET test within the term of the permit in addition to the test submitted with the application so that there will be a minimum of two WET tests to determine Reasonable Potential at the next permit reissuance. Finally, EPD will extend WET testing requirements to minor municipal facilities which accept wastewater from industries that discharge under an EPD pretreatment permit. These minors will be required to submit a WET test with their permit application.

Minimum WET Testing Requirements*

Type of Permit	Minimum WET Testing Requirements[1]	Minimum Number of Tests (<5 years old) that will be Available at Next Reissuance
Major Municipals; POTWs with a pretreatment program (or those that are required to have one under 40 CFR Part 403); any POTW that already has a WET limit or WET monitoring requirement	Four quarterly WET tests to be submitted with the permit application, or the permittee may submit the results from four tests performed at least annually in the four and one-half years prior to the application	4
Major Industrial	Must submit WET test with permit application and must conduct one additional WET test during the term of the permit.	2
Minor Municipals that accept wastewater from an industry that discharges under an EPD industrial pretreatment permit	Must submit WET test with permit application	1

*These minimum requirements will go into effect once EPD begins using NPDES Permit Application Form 3510-2A and once the Reasonable Potential Procedures and WET Strategy have been approved by EPA.