



## Maine Department of Environmental Protection

### Bureau of Land & Water Quality

#### O&M Newsletter

March 2007

A monthly newsletter for wastewater discharge licensees, treatment facility operators, and associated persons

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(WET) under the Chapter 530 Toxics Program. There are subtle differences between the old Toxics Program and the revised program, and between existing permits and the permit modification fact sheets issued April 10, 2006. As with implementation of any new regulatory program there is a learning curve for everyone involved, and the Department appreciates there may have been some confusion incurred this time around. There are concerns that additional WET testing required when an exceedence or reasonable potential for exceedence is found also forces more Analytical Chemistry testing than was specified in the April 10, 2006 permit modification.



#### **Clarifying some Toxics Program Issues: WET testing and Analytical Chemistry requirements; Receiving Water testing options; Testing Frequency and why you might want to test more often**

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The Department has received questions about testing requirements for Analytical Chemistry and Whole Effluent Toxicity

First, a bit of background. WET testing has, for many years, included chemical testing in addition to the biological analysis as part of the entire test protocol. That chemical testing supports the WET procedure by providing information on the effluent and helps to interpret the test results. Analytical Chemistry is a suite of tests, mostly metals, created when the toxics program rules were revised as Chapter 530 in fall 2005. After reviewing the results of priority pollutant testing done under the old rules, it was found that organic chemicals had a relatively low risk of causing ambient water quality concerns in Maine. However, several metals

were of greater risk. As a result, the Analytical Chemistry list was developed as a partial replacement for the more costly full priority pollutant scan. Under the present program, the full priority pollutant scans are routinely done only once every five years, and the Analytical Chemistry replaces priority pollutant testing during surveillance testing years. This more efficiently directs a targeted list of more relevant testing to those parameters having a higher categorical risk for environmental concerns. For most parameters, the Analytical Chemistry coincides with the chemical testing already being done with WET testing.

The basic testing frequencies – either regular or reduced – under Chapter 530 have Analytical Chemistry testing at the same or greater level than chemical testing for WET testing. This allows the Analytical Chemistry testing to do double duty by fulfilling the chemical testing needed to support WET testing when concurrent tests are required.

*The questions have arisen when WET testing must be done more frequently than Analytical Chemistry.* This occurs when a WET test shows an exceedence or reasonable potential for exceedence of water quality standards, and the frequency of WET testing is increased to more fully evaluate the situation. Since chemical testing must be done with the increased WET testing, this could be seen as a “back door” means of requiring more Analytical Chemistry than is required by a facility’s permit.

This is not the case. *Whenever WET testing is done, the supporting chemical testing is necessary irrespective of any other requirements.* This is usually specified in the Special Conditions of each facility’s permit. Typically, footnotes to the WET testing refer to attached reporting forms that

list the necessary chemical testing for the WET test. This has been the case since well before the introduction of Analytical Chemistry in the revised rules.

When doing WET testing, facilities need to review their permits to ensure that whatever chemical testing is required in support of the WET procedure is conducted. This is independent of and may be in addition to the minimum Analytical Chemistry testing requirements. Depending on when the permit was issued, the list of WET chemical testing will vary. Older permits do not include Arsenic, Cyanide and Silver where these are contained in newer permits which incorporate elements of the revised Chapter 530 Toxics Rule.

On a related note for WET chemical testing, as part of the implementation of changes in Chapter 530, the Department reviewed the historic practice of conducting metals and some other tests *on the receiving water* as part of the WET procedure. It was concluded that these were no longer necessary on a routine basis and were made optional for facilities. This represents a cost savings. However, since the receiving water can affect WET test results, facilities should collect, preserve and save a receiving water sample for later testing if indicated by the WET results. If you do save a receiving water sample, bear in mind that for fresh water, total solids, total suspended solids and conductivity cannot be held for sufficient times and should still be run at the time of the initial WET test; the reporting forms footnote the parameters that can be held.

And finally, a caution on test frequencies. In many cases under Chapter 530 facilities are able to enjoy reduced test frequencies when compared to the previous rule. The net result can be fewer tests on file for

compliance evaluation. Since these checks are done using a statistical analysis of the total number of tests for a facility during the preceding five years, the fewer the number of tests, the greater the uncertainty and variability of the data set. This will mean a higher correction factor being used to estimate potential toxicity from a limited number of tests. This may lead to a finding of reasonable potential for water quality impacts where such a finding might not occur had there been more tests to evaluate. This being the case, a facility that has been able to reduce its testing may find itself with specific effluent limits and increased testing in the future. This should be of most concern to facilities having relatively low dilution factors or those that have experienced higher test results for various parameters in the past. The best defense is to review your facility's individual situation and consider doing extra tests to create a more statistically reliable testing record.

As always, if you have questions about these topics, please contact your facility's assigned inspector.

*Dennis Merrill*

### **For Practice**

1. If the supernatant from an anaerobic digester has a high BOD content, how will it most likely affect the activated sludge aeration basin?
  - a. Increase the DO level.
  - b. Increase the MCRT.
  - c. Increase the F/M ratio.
  - d. Increase the removal efficiency.
  
2. A flow of 77 cfs is equal to
  - a. 12.2 MGD
  - b. 21.9 MGD
  - c. 36.4 MGD
  - d. 49.8 MGD

3. The type of solids that is the most difficult to remove using a standard biological treatment process is.
  - a. Organic dissolved
  - b. Inorganic dissolved
  - c. Organic suspended
  - d. Inorganic colloidal
  
4. The best description of new activated sludge floc is
  - a. Young, poor settling, underoxidized
  - b. Young, good settling, clear effluent
  - c. Old, rapid settling, overoxidized
  - d. Old, poor settling, underoxidized

### **Revised Reporting Forms for Toxics**

The Department has recently made some changes to forms used to report the results of toxicity testing. These are not major revisions in content, but are ones that will hopefully make reporting more convenient and efficient. As has been the case with the previous forms, you can download the revised forms from DEP's web site at [www.maine.gov/dep/blwq/docstand/wd/toxics/index.htm](http://www.maine.gov/dep/blwq/docstand/wd/toxics/index.htm). The forms are formatted as Excel spreadsheets, and all of the forms are now included in a single workbook. A memorandum at the same web site provides additional information about the forms and their use. However, those who are familiar with the previous forms should not have any difficulty with the updated versions as they retain the same layout and function.

The most significant change is to consolidate the chemistry reports by eliminating the separate sheets associated specifically with fresh and marine Whole Effluent Toxicity chemistry. Instead, those results can be reported on the same form as is now used for priority pollutants and

analytical chemistry, the so-called “ToxSheet”. This latter spreadsheet has the advantage of allowing evaluation of the test results for an individual facility’s situation. When using ToxSheet, it is important to make sure all the information at the top of the first page – facility name, dilution factors, sample dates, etc. – is properly filled in. Of special importance is the designator for fresh or marine water. This sets the correct reporting parameters and allows calculation of the right effluent limits.

An addition to the spreadsheet is to include the form used for reporting the results of Mercury testing. This places all related reporting forms in one location.

If you would like paper copies of the revised reporting forms, please contact your facility’s inspector.

*Dennis Merrill*

### ***Approved Training***

March 14, 2007 in Augusta, ME - Maine DEP issues Briefing - Sponsored by JETCC – approved for 6 hours  
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March 21, 2007 in Winthrop, ME - Chemical Feed System Design, Operation & Maintenance - Sponsored by JETCC – approved for 6 hours  
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March 22, 2007 in Worcester, MA - Water Reuse in New England: Drivers, Technologies & Examples – Sponsored by NEWEA – Approved for 4.5 hours

April 10, 2007 in Lewiston, ME - Using Corrosion Control Technologies to Extend the Life of your Equipment - Sponsored by JETCC – approved for 6 hours

April 18, 2007 in Seal Harbor, ME - QA/QC of laboratory Instruments - Sponsored by JETCC – approved for 3 hours  
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April 18, 2007 in Saco, ME - Hazard Communication & Personal Protective Equipment – sponsored by WPETC – Approved for 6 hours  
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April 18, 2007 in Seal Harbor, ME - Asset Management - Sponsored by JETCC – approved for 3 hours  
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April 26, 2007 in Winthrop, ME - In-House Process Control Test and Working with Your Contract Laboratory - Sponsored by JETCC – approved for 6 hours  
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May 1 & 2, 2007, in North Conway, NH - Advance Process Control for Activated Sludge - Sponsored by NEIWPC – approved for 12 hours  
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May 8, 2007 in Saco, ME - Bureau of Labor Standards: *Safety Update* - sponsored by WPTEC – Approved for 6 hours  
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May 15, 2007 in Belfast, ME - Bureau of Labor Standards: *Safety Update* - sponsored by WPTEC – Approved for 6 hours  
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May 22, 2007 in Houlton, ME - Bureau of Labor Standards: *Safety Update* - sponsored by WPTEC – Approved for 6 hours  
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May 31, 2007 in Saco, ME - Basic Instrumentation & Process Control Systems: *A Systems Approach* - sponsored by WPTEC – Approved for 6 hours  
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June 6, 2007 in Topsham, ME - Coliform Bacteria: *Analytical Procedures* - sponsored by WPTEC – Approved for 6 hours  
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June 13, 2007 in Topsham, ME - pH & Total Suspended Solids (TSS): *Analytical Procedures* - sponsored by WPTEC - Approved for 6 hours

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Note: JETCC stands for Joint Environmental Training Coordinating Committee - PO Box 487 - Scarborough, ME 04070-0487 - Tel (207) 253-8020

MRWA stands for Maine Rural Water Association - 14 Maine Street, Box 36 - Brunswick, ME 04011 - Tel (207) 729-6569

MWWCA stands for Maine Wastewater Control Association - c/o MMA - 60 Community Drive - Augusta, ME 04330 Tel (207) 623-8428

NEIWPC stands for New England Interstate Water Pollution Control Commission - 116 John St. - Lowell, MA 01852-1124 - Tel (978) 323-7929

NEWEA stands for New England Water Environment Association, 100 Tower Office Building, Suite K, Woburn, MA 01801 - Tel (781) 939-0908

WPETC stands for Wright Pierce Environmental Training Center, 99 Main Street, Topsham, ME 04086 - Tel. 207-725-8721



## Spring 2007 Exams

The spring exam will be given in the usual locations on Wednesday, May 16, 2007. Your application must be postmarked to JETCC by March 26, 2007 or hand delivered to their office in South Portland by March 30 2007.

### Answers to *For Practice*:

1. c - Increasing the BOD increases the food available to the microorganisms. Thus, the F:M (Food:Microorganism) ratio will increase
2. d -  $77 \text{ cfs} \times 7.48 \text{ gal/cu.ft} = 576 \text{ gps}$   
 $576 \text{ gps} \times 60 \text{ sec/min} = 34,560 \text{ gpm}$   
 $34,560 \text{ gpm} \times 60 \text{ m/h} = 2,073,600 \text{ ph}$   
 $2,073,600 \text{ gph} \times 24 \text{ hr/day} = 49.8 \text{ MGD}$
3. a - Dissolved organic solids are absorbed quickly by the microorganisms. Organic suspended solids are adsorbed to the microorganisms but must be broken down by enzymes before they can be absorbed. Inorganic dissolved solids are not removed by settling but are not, usually, taken up by the microorganisms. Colloidal inorganic solids are very difficult to remove because they do not settle and are not readily adsorbed by the microorganisms.
4. a - New activated sludge floc is made up a young cells that settle poorly and are underoxidized.