The Pipeline

Drinking Water Laboratory
Policy & Procedures Update

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Fall 2000

What Does LTW Mean?

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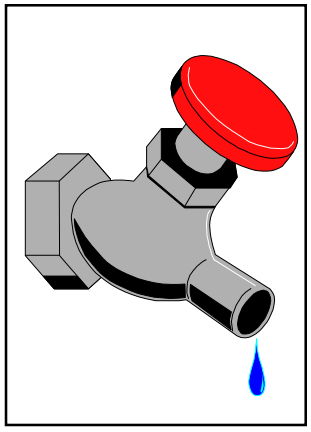


In the Turbidity chapter of the 2000 edition of the drinking water chemistry manual, there has been some confusion as to what information is to be entered on the "Quarterly Secondary Standard Calibration Data Sheet". The form has two boxes for "LTW NTU". This refers to Low Turbidity Water. It is the water that your lab uses to make dilutions of the 4000 NTU formazin, usually distilled or deionized water with a turbidity of <0.1 NTU. If you use formazin then you would check and record the turbidity of whatever water you use for the dilutions in this box. If your lab uses either AMCO or Hach StablCal primary standards, you DO NOT record the NTU of your lab's distilled/deionized water in the box. Instead, you record the 'LTW' supplied to you by the manufacturer. In the case of AMCO, you would record the turbidity of their 0.0 NTU standard as the 'LTW'. In the case of Hach StablCal standards, you would record the turbidity of their <0.1 NTU standard as the 'LTW'. The LTW value is then subtracted from the 1.0 NTU standard value.

Chemistry PT Information

If you did not participate for a test method for any reason during the first half of 2000, including the case where your PT supplier did not provide a particular parameter/parameter group, your result will be recorded as 'Did Not Participate". This is the same as analyzing a sample and falling outside of acceptable range, i.e., not acceptable.

It is your laboratory's responsibility to analyze PT samples twice each year for all parameter/parameter groups for which certification is maintained. Failure to do so may result in eventual invalidation of certification.

Microbiology PT Information

This is a reminder to all certified microbiology laboratories that the successful annual analysis of a microbiology PT sample set for each approved test is required. The samples should be tested during September-December 2000. The PT suppliers should supply this office with results shortly thereafter. Be sure to report your results directly to the PT supplier and include your lab code (OH number). Please contact James Evans in the laboratory certification office if you have any questions.

Langelier's Saturation Index

Included with this newsletter is an addendum to *The Laboratory Manual for Chemical Analyses of Public Drinking Water*. An additional procedure, that has been used by several labs has been formulated. The Langelier's Saturation Index, most often referred to as simply: Langelier's Index test, requires more equipment, but is faster than the pH/Alkalinity stability test and may be more accurate.

Determining Alkalinity on a pH Meter

Several laboratories, certified for alkalinity, use a pH meter for the alkalinity test rather than color indicators. The use of the pH meter results in better accuracy, but takes a little more time.

When using a pH meter, indicators and dechlorination agents are not used. The pH probes are placed in the sample, and the sample is titrated as normal, except the titration is stopped at the prescribed pH, rather than to a color endpoint. For phenol alkalinity, stop at a pH of 8.3. For total alkalinity, stop at a pH of 4.5 ($\pm$ 0.10). The other difference in the procedure, when using a pH meter to determine endpoints, is in the titrant standardization procedure. If you are using a pH meter, the distilled/deionized water 'blank' may be omitted. Instead, titrate two volumes of 20mL of 0.0200 N sodium carbonate to a pH of 4.5. Do not mix the standard with 30mL of distilled/deionized water as you would when titrating with an indicator.

Dilutions for Chlorine Kits

When the chlorine level (for free or total chlorine) you are testing exceeds the range of the chlorine kit you are using, you must make a dilution. This can be done, even in the field. The acceptable dilution procedure is as follows;

Equipment:
(2) polypropylene 50mL screw cap volumetric flasks

125-150mL screw capped container (for mixing dilutions)

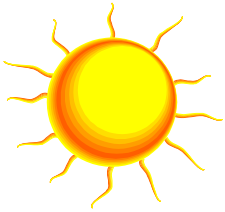
Procedure:

- Fill one plastic 50mL volumetric flask to the line with chlorine free, chlorine demand free deionized or distilled water.
- Measure 50mL of sample into the second plastic 50mL volumetric flask.
- Pour the content of both flasks into a clean, larger (125-150mL), screw capped container.
- Gently mix by inverting three times.
- Measure the diluted sample into the test cell immediately and test as normal.
- Double the reading on the instrument and report as mg/L of chlorine.

Ohio EPA Contacts

If you have any questions regarding any of the chemical contaminant groups, please contact the following people at (614)644-2752:

Rich Ciotola - VOCs; THMs
Wendy Sheeran - Inorganics; Asbestos; Radiological
Holly Kaloz - Nitrate/Nitrite
Todd Kelleher - SOCs



Drinkware Questions

For your information, Kevin Mills (the former Drinkware contact) has left the Ohio EPA (he and his family have moved to Texas). If you have any questions concerning Drinkware, please call Scot Foltz at (614)644-2752 on Mondays, Wednesdays and Fridays. On Tuesdays and Thursdays, Scot can be reached at (740)385-8501.

2001 Monitoring Schedules

The 2001 chemical monitoring schedules will be mailed to the public water systems in early December. The cover letter will remind the water systems that they need to provide the laboratories with all of the necessary PWS information required to complete the SSRs. Laboratories should also make sure that they are requesting all of the necessary PWS information. SSRs without this information will be sent back to the reporting labs for correction. The required information is listed on the SSR monitoring reporting instructions. If you have misplaced your copy, please call Todd Kelleher at (614)644-2752.

TOC, DOC, UV 254 Information

Surface water public drinking water systems serving 10,000 or more persons will be required to test for total organic carbon (TOC) and alkalinity once each month beginning in January 2002. There will be between 70 and 80 public water systems that will have this monitoring requirement. Additional public water systems will be required to comply starting in 2004. Preliminary data for these parameters may be collected for one year, starting in January 2001. In addition to TOC and alkalinity, public water systems may also be monitoring for dissolved organic carbon (DOC) and ultraviolet absorbance at 254 nm (UV254). DOC and UV254 are used to calculate the specific ultraviolet absorbance (SUVA). SUVA values may be used by the public water system as an alternative compliance criteria for TOC removal. If your laboratory is currently not certified for these parameters, you have two choices, you may have the tests performed in a certified laboratory, or you may obtain certification for these tests. The Ohio EPA is granting provisional authorization for these tests. Provisional authorization is a way to obtain approval for a new test, without having a survey completed immediately. You may apply for provisional authorization if you currently are approved for a similar test. Similar tests include: IC, spectrophotometric tests, primary metals or organics.

To obtain provisional authorization, submit a Provisional Authorization Application (obtain forms from James Evans) along with an SOP for the method, and an equipment list. Clearly indicate on the form what tests are being requested. Submit all applications to James Evans at the Ohio EPA/DES. If provisional authorization is granted, a survey will be conducted to determine compliance.

Metals by AAS/GFA

This is just a reminder for laboratories analyzing metals using a graphite furnace method. The quality control requirements for sample spiking has been revised as per the guidelines mentioned in the 9/8/2000 memorandum that was sent to all laboratories holding metals certification.

Laboratories are to follow the quality control guidelines in USEPA method 200.9 Rev. 2.2, May 1994, Section 9.0, with the exception of section 9.4.3. For the acceptable recovery range of the laboratory fortified matrix (LFM), use these guidelines; 85-115% for positive samples and 70-130% for non-detects (less than the metals reporting limit).

Currently the Ohio requirements for the reporting limit checks (RLC) and the second standard source QCs must be continued, even though they are not listed in method 200.9.

The most prominent changes in QC are; changing the matrix spiking frequency from 100% to 10% of the samples analyzed, expanding the matrix spiking acceptable recovery ranges to 85-115 for positive samples and 70-130% for non-detects (less than the metals reporting limit), and the addition of the instrument performance check (IPC) section 9.3.4.

Keep in mind, that the metals SOPs should be updated to reflect any changes in procedure and/or quality control

Microbiological PT Samples

Microbiological PT samples should be treated as if they are routine water samples once the initial preparation is completed. This means run the corresponding controls for the test method with the samples. If samples arrive in a sample bottle that is not an acceptable clear plastic or glass test vessel for the MMO-MUG procedure, shake the sample and measure 100 ml into your clear plastic or glass test vessel for analysis.

If you encounter problems with PT samples: broken in transit, leaked in transit, not received as specified in the instructions, do not filter or rinse like drinking water, etc. first contact the sample provider to explain the circumstances. Note the problem and the suppliers recommendations on the report form. After reporting your results to the sample provider, send a copy of your results and comments on the sample conditions to James Evans, PT Coordinator, Ohio EPA/DES.

This initial study is a learning experience for all involved. We would like to have as much data as possible to facilitate improving things in the future.

Late Breaking News: The Microbiology PT supplier, Microcheck, used a preservative in a previous PT sample series that made it difficult for the water to filter. Anyone who used Microcheck and is certified for membrane filter, that missed a sample set, will have this series of samples invalidated-this will NOT be counted against your laboratory. However you will need to analyze an acceptable set by the end of the year.

OhioEPA

Bob Taft, Governor of Ohio
Christopher Jones, Director of Ohio EPA

The Pipeline Newsletter is published as information becomes available. It is produced by The Ohio EPA, Division of Environmental Services, Laboratory Certification and Division of Drinking & Ground Waters, Enforcement & Water Quality Section. It is distributed to all certified drinking water laboratories.

Stability: Langelier Index

Quick Reference |	Standard/Reagent	Condition
Standard/Reagent/Equipment Storage Conditions	Sodium Carbonate	Refrigerated
	Calcium Chloride	Refrigerated
	pH Buffers	Room temperature
	TDS Standard	Refrigerated
Standard/Reagent Storage Times	Standard/Reagent	Maximum Storage Time
	Sodium Carbonate	One year after opening
	Calcium Chloride	One year after opening
	pH Buffers	Six months after opening
	TDS Standard	One year after opening
Required Quality Control	Frequency	Required QC
	Each test	Calibrate TDS meter
	Monthly	Titrant Standardizations
	Monthly	pH Slope/4.0 buffer
Sampling	Preservation	Storage
	None	Test immediately

Sample Container/Preservative

A clean plastic screw top container (250 - 1000 mL)
No preservative is necessary

Maximum Sample Holding Time

Test just after collection

Special Considerations

This test is designed only for water treatment plants to use on-site. To use this method laboratories must already be certified for: pH; Total Alkalinity; and Hardness.

Equipment

1. A Total Dissolved Solids (TDS) meter (often a conductivity meter will give a TDS value) with digital readout. (NOTE: A TDS meter is ONLY acceptable for this method. Use method SM-2540 C for all other TDS tests)

2. Liquid in glass thermometer in the appropriate range for the laboratory's tap water.

3. All equipment needed for pH, alkalinity and hardness tests.

4. Computer with Microsoft Excel, Microsoft Works (spreadsheet) or any other program that will correctly calculate Langelier's Index values. Copies of spreadsheets with all calculations in both formats are available, via email only, from the Laboratory Certification Section.

Reagents

1. TDS meter calibration solution (usually available from the meter's manufacturer). The meter should be calibrated at least once every three months.

2. Calcium hardness indicator/buffer, such as Cal-Ver (Hach)..

3. All reagents needed for pH, alkalinity and hardness.

Procedure

1. Collect a sample.

2. Immediately, check the temperature of the sample with a thermometer. Record the results.

3. Test sample for Total Alkalinity. Record results.

4. Test sample for pH. Record results.

5. Test sample for Calcium Hardness. Record results.

6. Enter results into spreadsheet, save a copy, print a copy, record results.

Langelier Index Test Results

Laboratory Name_____

Date	Name	Temperature (C)	pH	Calcium (Mg/L as CaCO3)	Alkalinity (Mg/L as CaCO3)	TDS	Langelier Index (From Spreadsheet)