

The Pipeline

Drinking Water Laboratory
Policy & Procedures Update

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New Laboratory Certification Rules

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New Lab Certification Rules

This issue will focus primarily on the new laboratory rules in the Ohio Administrative Code. These rules are slated to take effect on April 1, 1999. This date may change, however. The biggest news concerning the new rules is that most of the changes will not impact laboratories or cause changes. Most of the changes have been made so that the rules will actually reflect the way things are done on a day-to-day basis. For example, interim authorization has never been a part of the rules, it now is. In this newsletter, only the changes that may affect the management of laboratories are included. Please refer to the actual rules for details.

Applying for Initial Certification (3745-89-03)

A QA plan will be required for certain labs. See the article on "QA Plans/SOPs" for more details.

QA Plans/SOPs (3745-89-03)

As part of the application process, laboratories will be required to submit a quality assurance plan as specified below whenever an application for certification is submitted. The QA plan will be required for the following tests:

Primary Inorganic Chemicals (cyanide, nitrate, nitrate-nitrite, nitrite and sulfate);

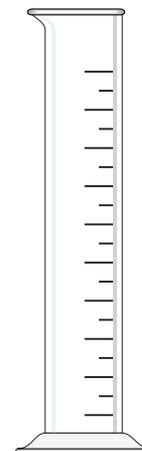
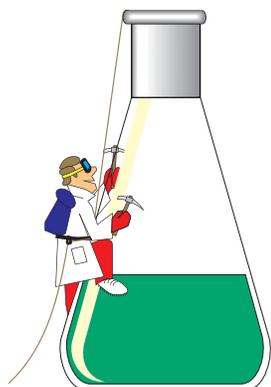
Primary Metals (includes: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium and thallium but does NOT include iron and manganese for plant control tests).

Organics (total trihalomethanes, volatile organic chemicals, pesticides and other organic chemicals)

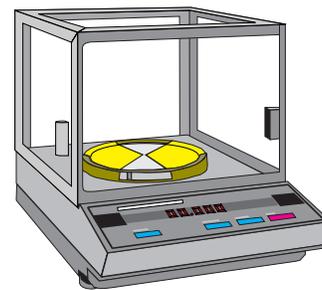
Revisions to the QAP/SOP must be submitted whenever changes are made to the original document. Affected labs will be individually notified when this requirement becomes effective.

QA plans must include all of the items outlined below:

- ◆ Sampling procedures that include an example of the written sampling instructions accompanying each sampling kit;
- ◆ Sample handling procedures, including:
- ◆ Directions for maintaining the integrity of the samples by tracking samples from receipt to testing to disposal;
- ◆ Directions for sample preservation, dechlorination, etc. as required by the reference method and the documentation used by the laboratory to verify that proper sample treatment is done;
- ◆ Directions to ensure that adequate sample information is obtained to allow the proper analysis and reporting of results; and



- ◆ Chain of custody forms;
- ◆ Calibration and standardization procedures for instruments and equipment, including the frequency such procedures will be implemented;
- ◆ Standard operating procedures including identification of the USEPA-approved reference methods used to perform the drinking water analyses;
- ◆ Data validation procedures including the conversion of raw data to standard units and the maintenance of accuracy for calculations and transcriptions;
- ◆ Reporting procedures including directions followed to ensure that reporting is completed as specified in rule 3745-89-08 of the administrative code;
- ◆ Standard and reagent procedures including directions followed for preparation and for documentation of the expiration of drinking water standards and reagents;
- ◆ Quality control procedures as specified by the director or required by each method of analysis;
- ◆ Preventative maintenance procedures including directions and scheduling for instrumentation servicing;
- ◆ Routine practices to maintain the precision and accuracy of data as specified by the director or required by each method of analysis;
- ◆ Corrective action procedures taken when unacceptable results are obtained from the analysis of performance evaluation samples or quality control checks.
- ◆ Table of laboratory organization which delineates the responsibilities of all laboratory personnel associated with drinking water analyses and designates the individual(s) responsible for quality assurance of drinking water analyses in the laboratory.



Renewal of Certificates (3745-89-04)

NOTICE

A QA plan will be required for certain labs. See the article on “QA Plans/SOPs” for more details.

The following section is a major change. It will greatly affect how and when you apply for surveys. Please read it carefully:

The application must be submitted no sooner than one hundred twenty days and no later than thirty days prior to the expiration date of the currently valid laboratory certificate of approval. If a completed application is not submitted by thirty days prior to the expiration date, the laboratory is not eligible for any extension beyond the expiration date of the certification. In addition a prescheduled date for an on-site survey is subject to cancellation. If the prescheduled date for an on-site survey is canceled, **a subsequent survey shall not be scheduled until at least fourteen days after the expiration date occurs.** After the expiration date occurs, the laboratory will no longer be certified.

(3745-89-03) The passing score for microbiological tests is 90%.

Lead and copper records must be retained for at least 12 years.

Performance Evaluation Samples (3745-89-05)

PE samples are required for primary inorganic chemicals which are: cyanide, fluoride (commercial labs), nitrate, nitrate-nitrite, nitrite, and sulfate; organic chemistry; and primary metals which include: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, and thallium. PE samples are also required for microbiological parameters.

PE samples can be provided by any PE supplier approved by the director of the Ohio EPA. An acceptable PE supplier will be designated by the Ohio EPA.

Interlaboratory comparisons (round robin tests) may be required under certain circumstances.

Definitions (3745-89-010)

Plant control tests and tests for operational approval are defined as: alkalinity, alkalinity stability, chlorine, chlorine dioxide, fluoride, hardness, pH, or turbidity.

Primary inorganic chemicals are defined as: cyanide, fluoride, nitrate, nitrate-nitrite, nitrite, and sulfate.

Primary metals are defined as: antimony, arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, and thallium.

Reporting Results to the Ohio EPA (3745-81-31 and 3745-89-08)

Except where a different reporting period is specified in this chapter, the public water system is responsible for ensuring that the results of a test, measurement, or analysis required to be made are reported to the Ohio EPA within the first ten days following the month in which the result is received for that test, measurement, or analysis or within the first ten days following the end of the required monitoring period as specified by the director, whichever occurs first.

A public water system also shall report all such results to the Ohio EPA by the tenth day following the month in which the chemical analyses are completed and by the tenth day following the month in which a sample is **collected** for microbiological analysis.

Microbiological laboratories must report each positive test result and all repeat sample test results to the appropriate Ohio EPA district office either by fax or by electronic mail by no later than the end of the next business day after the result was obtained.

Every analysis that exceeds any maximum contaminant level must be reported to the Ohio EPA by fax or by electronic mail by no later than the end of the next business day after the result was obtained.

Laboratories must report analytical results in accordance with reporting limits established by the Ohio EPA. Analytical results shall not be reported as a less than value for contaminant concentrations equal to or greater than the reporting limit for that contaminant.

Interim Authorization (3745-89-09)

The number of individuals requested by the laboratory to obtain interim authorization by the laboratory for plant control testing may not be more than two per application.

Documentation for each individual on each plant control test requested for interim authorization of at least twenty days of analytical results generated in parallel testing with an analyst included on a certificate of approval for those same plant control tests. The previous approval of an individual to perform plant control tests may be considered for satisfying this requirement.

Within six months of an interim authorization, an on-site survey will be scheduled to verify the acceptable performance of the individual(s) granted the interim authorization. Interim authorization shall remain in effect for a period not to exceed six months or, if an on-site survey is scheduled or has been conducted, until the on-site survey report is issued.

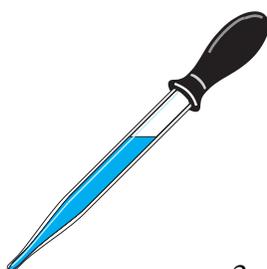
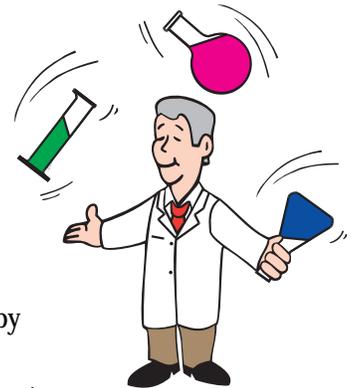
Provisional Authorization (3745-89-10)

This section was added to give the Ohio EPA the ability to add new methods and tests for new contaminants between when new regulatory requirements are being implemented.

Provisional authorization shall only be available to laboratories which currently have valid certification under this chapter for the same type of drinking water analysis (microbiological contaminants, primary inorganic, primary metals, etc.) as the drinking water analyses to be included in the provisional authorization.

In order to be considered for provisional authorization, the laboratory shall submit to the director an application for provisional authorization, on a form provided by the director.

An on-site survey shall be scheduled to verify acceptable performance by the laboratory granted provisional authorization. Provisional authorization shall remain in effect for the length of time specified by the director or until the on-site survey is completed, whichever occurs first.



Status of PE Program

Currently the requirement to participate in a drinking water performance evaluation sample program has been temporarily suspended. Ohio is in the process of approving PE suppliers for drinking water certification. The official program cannot begin until approved suppliers are available. **It is suggested that, until Ohio's program is operational, commercial laboratories voluntarily contract with a private PE supplier of their choice to provide inter-laboratory check samples for all parameter groups that they hold certificates.**



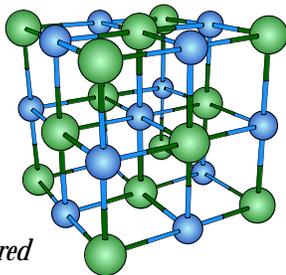
Laboratories that want to pursue certification for a parameter group that they are not currently approved must contract with a PE supplier (of their choice) that has an inter-laboratory drinking water program. The laboratory must submit a copy of the data that is reported to the PE provider directly to the state coordinator (James Dolfi). The PE provider must send the laboratory's report with true values and limits to the state coordinator for the results to be valid.

The protocol as outlined above may also be used for laboratories that have failed parameter groups on both WS040 and WS041 and subsequently lost certification for that parameter group.

When Ohio's program is in operation, PE's will be required for all chemistry tests with an MCL with the exception of turbidity. Fluoride PE samples will be required for commercial laboratories but will not be required for public water supplies that participate in the "Fluoride Split Sample Program". Tests which have no MCL such as: alkalinity, pH, stability, hardness, iron, manganese, chloride and chlorine will not require PE samples. Chemistry PE tests will be required at least twice each year. Laboratories certified for microbiology procedures will also be required to participate in the PE program, at least once each year. It is anticipated that the program will begin sometime after April 1, 1999. Certified laboratories will be notified when Ohio's PE sample program begins.

Magnesium Chloride Stock Solution

The Fall 1998 *Pipeline* contained the preparation procedure for the new formulation of *Buffered Rinse Water (Revised 10-98)*. Some laboratories have reported difficulties in the preparation of the additional component, the magnesium chloride stock solution. The $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ (Magnesium Chloride Hexahydrate) may have the consistency of slushy snow cone ice. If so, it will be very difficult to directly and completely transfer an accurately weighed portion into the narrow neck of a volumetric flask.

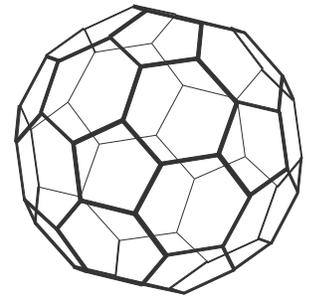


If you experience this difficulty you may use the following procedure.

Magnesium Chloride Stock Solution *Optional Procedure*: Dissolve 81.1 g $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ with laboratory pure water by swirling in a wide mouth Erlenmeyer flask or mixing in a beaker with a magnetic stir bar. The magnesium chloride hexahydrate will readily dissolve with less than the full volume of water. Once dissolved, transfer the solution to a 1 liter volumetric flask (This may require a clean laboratory funnel). Rinse the flask or beaker with three separate portions of laboratory pure water; adding each rinse to the volumetric flask. Dilute to a final volume of 1 liter in the volumetric flask with laboratory pure water. Date each batch of stock MgCl_2 solution with a date of preparation and store in the refrigerator at $0.0 - 5.0^\circ\text{C}$ for not more than 6 months. Prepare fresh stock solution at least every 6 months or if turbidity indicates microbial growth. Note: You may prepare other size batches by adjusting proportions and glassware accordingly.

Reporting Total Coliform Results

Recently the issue of "Optionally" reporting numerical total coliform counts surfaced again. This article outlines the official Ohio EPA Policy for reporting total coliform results.



On April 11, 1991 microbiological laboratories were mailed the 1991 edition of the *Laboratory Manual for Microbiological Analysis of Public Drinking Water* along with a revision notice. The notice included the following statement: "Calculation and counting procedures have been included in this edition, however they will no longer be used...You will only be required to report 'Total Coliform Positive' or 'Total Coliform Negative'..."

Maximum contaminant levels for microbiological contaminants (3745-81-14), only deals with total coliform positive (versus total coliform negative) sample results.

Reporting of analytical results (3745-89-08), also only deals with total coliform positive (versus total coliform negative) sample results.

The 1995 edition of the *Laboratory Manual for Microbiological Analysis of Public Drinking Water* did not contain sections on counting colonies and calculating numerical counts because this option does not exist in Ohio Administrative Code. To date, the code only has provisions for reporting the presence or absence of total coliforms for compliance samples by Ohio EPA certified laboratories. Certified laboratories reporting official test results as a numerical count are in violation of program protocol.

Overview of 1999 Chemical Monitoring

The 1999 chemical monitoring schedules were mailed to the public water systems in December 1998. These schedules list the monitoring requirements only for 1999, and **do not** list the requirements for coliform or lead/copper testing (please contact the appropriate district office for specific requirements for these contaminants). Listed below are the basic requirements for each of the chemical groups. Please be advised, however, that variations may exist from the general requirements and can only be confirmed by reviewing an individual schedule.

Synthetic Organic Chemicals (SOCs): Community and non-transient ground water systems (approximately 2000 systems) are scheduled to test one time for the following 5 pesticides during the April - June quarter: alachlor; atrazine; simazine; metolachlor; metribuzin. No additional testing for these 5 pesticides will be required unless there is a detect during the April - June quarter. Community and non-transient surface water systems (approximately 150 systems) are scheduled to test for the same set of pesticides beginning in the May - July time period. The sampling frequency for the surface waters will vary greatly, ranging from sampling during the 2nd and 4th weeks of May - July, to sampling just one time during the 3 month period. Some systems are scheduled to continue quarterly testing after the May - July time period. Individual schedules will need to be consulted in order to confirm a system's required frequency.

Volatile Organic Chemicals (VOCs): Approximately 845 community and non-transient surface and ground water systems are scheduled to monitor for VOCs during 1999. Of this total, 95 systems are required to monitor on a quarterly basis, and 750 systems are required to monitor once during the year (typically either in the first or second six month time period). Systems that have had a VOC detection in the past, and are now monitoring annually, are scheduled to sample during the quarter that had the highest detection (Individual schedules will need to be reviewed in order to confirm a system's required frequency).

Inorganic Chemicals (IOCs): Approximately 150 community and non-transient surface water systems and 600 community and non-transient ground water systems are scheduled to monitor for the IOCs one time during 1999. All of the community and non-transient systems are scheduled to sample arsenic and fluoride. Requirements for the other inorganics are based on the sampling history for each system and are listed on the individual monitoring schedules.

Asbestos: Community and non-transient systems which have not previously monitored for asbestos are required to monitor in 1999. Approximately 50 systems are scheduled to monitor for asbestos in 1999.

Nitrate/Nitrite: All ground water systems are required to monitor for nitrate annually. Systems located in any of the 44 counties of Adams through Lawrence are scheduled to collect samples between January 1 and June 30, 1999 (2200 systems).

Systems located in any of the 44 counties of Licking through Wyandot are scheduled to sample between July 1 and December 31, 1999 (3500 systems). Surface water systems and ground water systems under the direct influence of surface water monitor monthly.

Radiological: Only the community water systems are required to sample for radiological contaminants. Approximately 300 ground water systems will monitor one time for gross alpha in 1999. All community surface water systems (approximately 140) are scheduled to monitor for gross alpha and gross beta one time in 1999. Currently, 23 systems are scheduled for quarterly radiological monitoring in 1999.

Fluoride Split Samples

Due to the recent cold weather that we haven't experienced for the last two years, we've noticed an increased number of fluoride split sample that have been over the allowable 0.15 mg/L tolerance level. A possible cause for this increase may be that samples being run in the water plant laboratories are not being brought to room temperature prior to analysis. It is very important to have the standards and the samples at the same temperature for an accurate reading. Samples that are analyzed at a lower temperature than the standards will show a higher concentration than they should, the difference can be as great as 0.20 mg/L.

Please review your procedure with all the certified staff and stress the importance of allowing the samples to stabilize to room temperature prior to beginning analysis.

OhioEPA

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



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