

**INSTRUCTIONS
WATER PLANT/DISTRIBUTION SYSTEM MOR
EPA FORM 5002**

These instructions will assist operators in the completion of the Form 5002 monthly operating report.

Operational monitoring is required for all community systems and those non-community systems that:

- are required to maintain a chlorine residual in their distribution system, either a major non-community system (serves $\geq 1,000$ population) or for another reason (plan approval, etc)
- add phosphate (polyphosphate, orthophosphate, or ortho/poly blends)
- adjusts pH for approved corrosion control or for stability
- provides precipitative softening
- adjusts alkalinity for approved corrosion control
- apply a copper compound to their surface water supply
- treat for a primary MCL (arsenic, nitrate, etc); surrogate monitoring will most likely be required

The specific operational monitoring that has to be performed is identified in OAC 3745-83-01 (F) (1) thru (F) (10). Public water systems that treat their water with disinfectants are also required to monitor for inorganic disinfection byproducts and disinfection residuals per OAC 3745-81-23 (L) and (M) and 3745-81-70 (E) (1) and (F).

The monitoring requirements are summarized in the Operational Monitoring Requirements document (two tables), available on the internet at <http://www.epa.ohio.gov/ddagw/reporting.aspx>. Analyses beyond those identified in these two tables may be necessary for good operational control.

All analyses are to be conducted in accordance with the methods specified in OAC Rule 3745-81-27. Specific analyses that must be performed in a laboratory certified in accordance with OAC 3745-89 are identified in OAC 3745-83-01 (B). Public water systems with certified laboratories should verify the calibration of their DPD chlorine test kits quarterly. For all other public water systems that utilize DPD chlorine test kits, it is recommended that they verify the calibration of their DPD chlorine test kits at least annually (verifying calibration indicates that it has been tested against a known sample and not that it has been sent back to the manufacturer for a formal calibration; laboratories certified to perform chlorine analysis on drinking water may be able to verify the calibration of a chlorine test kit).

OAC 3745-83-01 (H) requires those public water systems affected by the above mentioned rules to submit a report for each month of operation. Submission of Ohio EPA Form 5002 will satisfy this reporting requirement. The report must be submitted to your local Ohio EPA District Office by the 10th day of the month following the reporting month.

The operation report shall be submitted electronically via a method acceptable to the director and in accordance with the following schedule.

Population served	Latest date to begin electronic reporting
3,301 or more	July 1, 2012
501 - 3,300	July 1, 2013
Less than 500	July 1, 2014

The director may grant up to a twenty-four month extension to the electronic reporting requirement. A public water system requesting an extension shall submit a detailed explanation as to why electronic reporting cannot be performed.

INSTRUCTIONS

1. Public Water System Information

- Print or type the PWS Name and the STU Name (Facility).
- Enter the PWS ID # and the STU # (Facility ID).

2. Laboratory Information

- For the Reporting Period enter the Month and Year (i.e., 7/2012).
- Enter the Reporting Lab ID number
 - If both a commercial lab and the WTP lab are utilized, identify the commercial lab number in the header and enter the WTP lab number (or additional commercial lab numbers) in the comment section.
 - If a chlorine test kit is being used and it is the only analysis being performed, enter 8000.
 - If an iron/manganese test kit is being used, enter the ID number of the lab that performs the monthly Fe/Mn analysis.
- Enter the Reporting Lab Name
 - If both a commercial lab and the WTP lab are utilized, identify the commercial lab name in the header and enter the WTP lab name (or additional commercial lab names) in the comment section.
 - If an iron/manganese test kit is being used, enter the name of the lab that performs the monthly Fe/Mn analysis.

3. Analytical Information

- Any analytical results that are below the detection limit should be reported at the detection limit (<0.1 would be reported as 0.1).
- Report the data to the accuracy requested in these instructions. If rounding is necessary then round up if the digit to be truncated is '5' or greater (for example, if the data is to be reported to one decimal place, 1.24 becomes 1.2; 1.25 becomes 1.3).

(a) Plant Production (Daily)

- Enter the day's quantity of water produced.
- Report in millions of gallons per day - MGD (report in MGD even for low productions; a production of 1,500 gallons/day would be reported as 0.0015 MGD).
- On days when no water is produced, report a zero.
- Water systems which purchase water should report their daily water use if that information is available; otherwise, report an estimate of the daily water use based upon monthly or quarterly master meter readings.
- If only a monthly production value is recorded, enter this value on the 1st or the 31st.

(b) Calculated Fluoride Dosage

- Reporting of the calculated fluoride dosage is not specifically required by OAC 3745-83-01(F) however OAC 3745-82-03(C)(2) requires that this information be recorded daily (i.e., record on bench sheets).
- If reported, report the calculated fluoride level at the plant tap.
- If reported, report to two decimal places.
- Calculate using finished water metered supplies.

(c) Fluoride - Raw (Monthly)

- Report the fluoride content of the water prior to the application of such.
- Report to two decimal places.
- If more than one sample is collected in any one day from the same source, then report the average.

References

OEPA WQ policy 11-001, OAC 3745-82-03, OAC 3745-83-01

(d) Fluoride - Plant Tap (Entry Point)

- Report the fluoride content of the water collected at the plant tap.
- Report to two decimal places.
- If more than one sample is collected in any one day, report the average. Also, if any sample is outside of the 0.8 - 1.3 mg/L range, report this in the comment section.

References - OEPA WQ policy 11-001, OAC 3745-82-03, OAC 3745-83-01

(e) Fluoride – Distribution

Reporting the fluoride level in the distribution system is not required by OAC 3745-83-01(F) however, if it is reported on this MOR, follow these guidelines:

- Report to two decimal places.
- If more than one sample is collected in any one day, report the highest.

References

OEPA WQ policy 11-001, OAC 3745-82-03, OAC 3745-83-01

(f) Highest Fluoride Result of the Month

- Report the highest fluoride result collected at the plant tap.
- Report to two decimal places.

(g) Date of the Highest Fluoride Result of the Month

- Report the date of highest fluoride result collected at the plant tap.

(h) Fluoride Compound Applied

Identify which of the following fluoride compounds is utilized:

- Sodium Fluoride - NaF
- Sodium Silicofluoride - Na₂SiF₆
- Hydrofluosilicic Acid - H₂SiF₆.

(i) Fluoride Quality Control Check Sample Date

Report the date on which the fluoride quality control check sample was performed.

(j) Fluoride Quality Control Check Sample (P/F)

Report the result of the fluoride quality control check sample as Pass (P) or Fail (F).

Additional Fluoride Information:

(excerpted from the Ohio EPA Fluoride Policy, WQ-11-001, OAC 3745-82-03)

For all public water systems that add fluoride, compliance with the primary MCL of 4.0 mg/L and the secondary MCL of 2.0 mg/L will be determined based on a running annual average of the daily plant tap results as reported on Ohio EPA Form 5002, as specified in OAC 3745-81-23 (H)(2). If the monthly plant tap average exceeds either the primary or secondary fluoride MCLs, the annual average will be calculated by adding the current monthly plant tap average with the 11 previous monthly plant tap averages and dividing by 12. A public water system is out of compliance if this annual average exceeds either the primary or secondary MCLs.

In accordance with OAC 3745-82-03 (C)(1)(c), public water systems that add fluoride shall maintain a range of 0.8 - 1.3 mg/L in the finished water (plant tap/entry point) and shall notify Ohio EPA within 48 hours of any instance in which the range is not maintained. A public water system will incur either an NOD or an NOV if it has four or more days during a month in which the daily average (as reported in the 'plant tap' column on Ohio EPA Form 5002) is outside the range. NOV's will be issued to those PWSs regulated by ORC 6109.20 (population ≥ 5000); NODs will be issued to those PWSs with population < 5000 or exempted from 6109.20.

In accordance with OAC 3745-82-03 (C)(3), public water systems that lose their capability to accurately determine the fluoride content of their finished water due to laboratory equipment failure or malfunction, shall cease feeding all fluoride compounds and notify the Ohio EPA within 48 hours with a tentative schedule for re-establishing laboratory capabilities.

In accordance with OAC 3745-82-03 (C)(4), public water systems that lose their capability to feed fluoride shall notify Ohio EPA within 48 hours and provide a tentative schedule for resumption of acceptable fluoridation.

In accordance with OAC 3745-82-03 (C)(2), public water systems that add supplemental fluoride shall keep a daily record of the amount of fluoride compound added, the quantity of water fluoridated, the calculated fluoride dosage, and the fluoride content of the water as delivered to their customers.

The theoretical fluoride level at the plant tap on any given day is equal to the calculated dosage plus the raw water concentration. The theoretical and actual plant tap fluoride concentrations should agree within 0.20 mg/L.

In the event of an over feed, the following recommendations from the Center for Disease Control and Prevention and Ohio EPA should be used:

Fluoride Content (mg/L), as measured at the entry point (plant tap)*	Recommended Actions
1.4 to 2.0	<ol style="list-style-type: none"> 1. Leave the fluoridation system on. 2. Determine malfunction and repair. 3. Notify supervisor and report the incident to the Ohio EPA and to the appropriate county health department.
2.1 to 4.0	<ol style="list-style-type: none"> 1. Determine malfunction and immediately try to repair. 2. If the problem is not found and corrected quickly, turn off the fluoridation system. 3. Notify supervisor and report the incident to the Ohio EPA and to the appropriate county health department. 4. If fluoridation system was turned off then determine malfunction, repair and restart.
4.1 to 10.0	<ol style="list-style-type: none"> 1. Determine malfunction and immediately try to repair. 2. If the problem is not found and corrected quickly, turn off the fluoridation system. 3. Notify supervisor and report the incident to the Ohio EPA and to the appropriate county health department. 4. Take water samples at several points in the distribution system and test the fluoride content. Flush and retest if results are high. 5. Determine malfunction and repair. Then, with supervisors permission and Ohio EPA's permission restart the fluoridation system.
10.1 or higher	<ol style="list-style-type: none"> 1. Turn off the fluoridation system immediately. 2. Notify supervisor and report the incident to the Ohio EPA and to the appropriate county health department. 3. Issue a no use advisory to the public.** 4. Take water samples at several points in the distribution system and test the fluoride content. Flush and retest if results are high. 5. Determine malfunction and repair. Then, with supervisors permission and Ohio EPA's permission, restart the fluoridation system. 6. Notify the public once the problem has been fixed.

* The data shall be rounded to one decimal place. Round up if the digit to be truncated is '5' or greater (for example, 0.74 becomes 0.7; 1.35 becomes 1.4).

** Compliance with the fluoride MCL and SMCL is determined based on a running annual average of the daily plant tap results. Under most circumstances, one or two days of fluoride over the SMCL or MCL will not cause the annual average to exceed either standard, and does not pose an immediate or long term threat to public health. The no use advisory at 10.1 mg/L or higher is a precautionary measure recommended by the CDC for those rare overfeed events that result in fluoride concentrations greater than 10 mg/L.

Formulae to determine fluoride dosage -

For Sodium Fluoride (NaF): $\frac{\text{Gallons saturated solution} \times 0.018}{\text{MGD water treated}} = \text{mg/L fluoride}$

For Sodium Silicofluoride (Na₂SiF₆): $\frac{\text{lbs. Na}_2\text{SiF}_6}{\text{MGD water treated} \times 13.95} = \text{mg/L fluoride}$

For Hydrofluosilicic Acid (H₂SiF₆): $\frac{\text{lbs. H}_2\text{SiF}_6 \text{ used} \times \% \text{ H}_2\text{SiF}_6 \text{ (from supplier)}}{\text{MGD water treated} \times 10.56} = \text{mg/L fluoride}$

(k) pH (Entry point)

Report pH if it is adjusted for an Ohio EPA approved corrosion control recommendation or study, if it is being adjusted for stability, or if lime softening is performed.

- Report to one decimal place.
- If more than one sample is collected in any one day, report the average.
- Report pH if it is adjusted for corrosion control. Report on either this Form (5002) or Form 5108 as follows:

Community public water systems that serve greater than 50,000 people shall report pH using Form 5108.

Community and Non-Transient public water systems that serve no more than 50,000 people and have to report pH per an Ohio EPA approved lead/copper corrosion control recommendation should utilize this MOR (form 5002) for this reporting requirement except as follows.

Community and Non-Transient public water systems that serve no more than 50,000 people, where pH levels are specified in the distribution system, and have to report pH per an approved corrosion control recommendation or an Ohio EPA Director's Letter should report on Ohio EPA form 5108. These results are not reported on this MOR (form 5002). Form 5108 is submitted every six months.

Note: Water Quality Parameter (WQP) compliance is defined in OAC 3745-81-82 (G) which allows 9 excursions in a six month period. Each day in between sampling events is considered an excursion. Additional sampling would be required in order to not exceed the 9 excursions and trigger a violation.

References

Number: ENG-02-001 Guidelines for Treatment Process Ratings at Precipitative Softening Ground Water Treatment Plants
OAC 3745-82-02; OAC 3745-83-01(F)(8)

(l) Alkalinity - Phenol (Entry Point)

- If more than one sample is collected in any one day, report the average.

Reference

Number: ENG-02-001 Guidelines for Treatment Process Ratings at Precipitative Softening Ground Water Treatment Plants

(m) Alkalinity – Total (Entry Point)

If more than one sample is collected in any one day, report the average unless alkalinity stability is also performed in which case only the corresponding total alkalinity value should be reported.

- Report alkalinity if it is adjusted for corrosion control. Report on either this Form (5002) or Form 5108 as follows:

Community public water systems that serve greater than 50,000 people shall report alkalinity using Form 5108.

Community and Non-Transient public water systems that serve no more than 50,000 people and have to report alkalinity per an Ohio EPA approved lead/copper corrosion control recommendation should utilize this MOR (form 5002) for this reporting requirement except as follows.

Community and Non-Transient public water systems that serve no more than 50,000 people, where alkalinity is specified in the distribution system, and have to report alkalinity per and approved corrosion control recommendation or an Ohio EPA Director's Letter, should report on Ohio EPA form 5108. These results are not reported on this MOR (form 5002). Form 5108 is submitted every six months.

Note: Water Quality Parameter (WQP) compliance is defined in OAC 3745-81-82 (G) which allows 9 excursions in a six month period. Each day in between sampling events is considered an excursion. Additional sampling would be required in order to not exceed the 9 excursions and trigger a violation.

Reference

Number: ENG-02-001 Guidelines for Treatment Process Ratings at Precipitative Softening Ground Water Treatment Plants

Alkalinity is also used in TOC compliance calculations. See SW treatment MOR instructions. Reference OAC 3745-81-74

(n) Alkalinity – Stability (Entry Point)

Enter the result of the Calcium Carbonate Stability (Marble) Test or the calculated pH Saturation Value (to one decimal place) when using Langelier's Index for calcium carbonate stability.

Note: Report the actual alkalinity test result NOT the difference between (m) and (n).

References

Number: ENG-02-001 Guidelines for Treatment Process Ratings at Precipitative Softening Ground Water Treatment Plants

OAC 3745-83-01(F)(1)(c)

(o) Hardness (Entry Point)

- Report Total Hardness as CaCO₃.
- If more than one sample is collected in any one day then report the average.

References

Number: ENG-02-001 Guidelines for Treatment Process Ratings at Precipitative Softening Ground Water Treatment Plants

OAC 3745-83-01(F)(9)

Ion exchange plant reference: Guidelines for Design of Small Public Ground Water Systems Section 4.3

(p) Phosphorus as Total P (Entry Point)

- Report if phosphate is fed for other than corrosion control (i.e., sequestration).
- Report as total phosphorus (P).
- Report to one decimal place.
- If more than one sample is collected in any one day then report the highest.

References

Recommended Standards for Water Works Section 4.6.5

OAC 3745-83-01(F)(10)

(q) Orthophosphate as PO₄ (At Entry Point)

- Report as orthophosphate (PO₄).
- Report to one decimal place.
- If more than one sample is collected in any one day, report the lowest value in this column. Additionally report the highest value in the 'comment' column with the following notation: "Orthophosphate at entry point (high value) = _____ mg/L".
- Report orthophosphate if it is fed for corrosion control. Report on either this Form

(5002) or Form 5108 as follows:

Community public water systems that serve greater than 50,000 people shall report orthophosphate using Form 5108.

Community and Non-Transient public water systems that serve no more than 50,000 people and have to report orthophosphate per an Ohio EPA approved lead/copper corrosion control recommendation should utilize this MOR (form 5002) for this reporting requirement except as follows.

Community and Non-Transient public water systems that serve no more than 50,000 people, where orthophosphate levels are specified in the distribution system, and have to report orthophosphate per and approved corrosion control recommendation or an Ohio EPA Director's Letter, should report on Ohio EPA form 5108. These results are not reported on this MOR (form 5002). Form 5108 is submitted every six months.

Note: Water Quality Parameter (WQP) compliance is defined in OAC 3745-81-82 (G) which allows 9 excursions in a six month period. Each day in between sampling events is considered an excursion. Additional sampling would be required in order to not exceed the 9 excursions and trigger a violation.

Reference

OAC 3745-83-01(F)(7)

(r1) Iron (Entry Point)

- Report to one decimal place (0.34 becomes 0.3; 0.35 becomes 0.4, which exceeds the SMCL).
- If more than one sample is collected in any one day, report the highest.
- All entry point data should be recorded for the day it was collected.

Reference

OAC 3745-83-01(F)(5)

(s1) Manganese (Entry Point)

- Report to two decimal places (0.054 becomes 0.05; 0.055 becomes 0.06, which exceeds the SMCL).
- If more than one sample is collected in any one day then report the highest.
- All entry point data should be recorded for the day it was collected.

References

OAC 3745-83-01(F)(6)

(r2) Iron Quality Control Laboratory Check (Split) Sample

Community PWSs with treatment to reduce iron and which elect to use a test kit must perform a split sample with an OEPA approved lab once per month. Report the lab analysis and date. The difference between the lab analysis and the corresponding test kit analysis should be no greater than 0.2 mg/L. If it is greater than 0.2 mg/L, re-instate weekly monitoring at an Ohio EPA approved lab per OAC 3745-83-01 (F)(5)(c) within 72 hours. Weekly split sampling shall continue until the deviation between the split sample results from an in-house test kit and a certified laboratory is within acceptable limits.

References

OAC 3745-83-01(F)(5)(c)

(s2) Manganese Quality Control Laboratory Check (Split) Sample

Community PWSs with treatment to reduce manganese and which elect to use a test kit must perform a split sample with an OEPA approved lab once per month. Report the lab analysis and date. The difference between the lab analysis and the corresponding test kit analysis should be no greater than 0.04 mg/L. If it is greater than 0.04 mg/L, re-instate weekly monitoring at an Ohio EPA approved lab per OAC 3745-83-01 (F)(6)(c) within 72 hours. Weekly split sampling shall continue until the deviation between the split sample results from an in-house test kit and a certified laboratory is within acceptable limits.

References

OAC 3745-83-01(F)(6)(c)

(t) Copper (Entry Point)

- Report to one decimal place.
- If more than one sample is collected on any one day, report the highest.

Reference

OAC 3745-83-01(F)(3)

(u) Chlorine Dioxide (Entry Point)

- Report the level of chlorine dioxide collected at the entrance to the distribution system daily.
- Report to at least one decimal place.
- If more than one sample is collected in any one day, report the highest.

If any routine daily sample, taken at the entrance to the distribution system, exceeds the MRDL of 0.8 mg/L then place an 'x' in the adjacent "Exceed" column and take a *follow-up* three sample set for chlorine dioxide in the distribution system on the following day (proceed to instruction (cc) (dd)).

An **acute** MRDL violation occurs when:

Any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one or more of the three samples taken in the distribution system exceeds the MRDL, or

Failure to conduct the *follow-up* monitoring in the distribution system (three sample set).

The public water system shall take immediate corrective action to lower the level of chlorine dioxide below the MRDL and shall notify the public according to the procedures for acute health risks in rule 3745-81-32 of the OAC.

The public water system must notify its Ohio EPA District Office within 24 hours of determining it has an acute MRDL violation.

A **non-acute** MRDL violation occurs when:

Any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL but all distribution system samples are below the MRDL, or

Failure to monitor at the entrance to the distribution system the day following an exceedance of the chlorine dioxide MRDL.

The public water system shall take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and shall issue a tier 2 public notice in accordance with Ohio Administrative Code rule 3745-81-32(C).

Reference

OAC 3745-81-70 (F)

(v) Chlorite (Entry Point)

- Report the level of chlorite collected at the entrance to the distribution system daily.
- Report to one decimal place.
- If more than one sample is collected in any one day then report the highest.

If any routine daily sample, taken at the entrance to the distribution system, exceeds the chlorite maximum contaminant level (MCL) of 1.0 mg/L then place an 'x' in the adjacent "Exceed" column and take a *follow-up*, three sample set for chlorite in the distribution system on the following day [proceed to instruction (cc)(dd)].

Compliance with the MCL for chlorite shall be based on an arithmetic average of each three-sample set taken in the distribution system. If the arithmetic average of any three-sample set exceeds the MCL, the system is in violation of the MCL and must notify the public according to rule 3745-81-32 of the OAC.

<u>Reference</u> OAC 3745-81-23(M)

Chlorine Residual (w, x, y, z) - A public water system that provides water treated with chlorine shall monitor for free OR combined chlorine at least once every day that water is available to the public at each entry point to the distribution system and at a representative point in the distribution system.

- Non-community, ground water systems that utilize chlorine solely for the oxidation of iron, manganese or hydrogen sulfide and are not required to maintain a chlorine residual in the distribution system, do not have to perform this monitoring.
- Non-Community ground water systems whose distribution system is solely interior plumbing in a single building, only need to collect one representative sample daily (either Entry Point or Distribution).
- Non-Community pws's that feed chlorine for disinfection purposes are required to monitor and report chlorine residual levels on an MOR.
- Satellite systems without supplemental chlorination do not need to monitor chlorine residual at the entry point to the distribution system.

- (w) Chlorine Residual - Free (daily at plant tap / entry point)
(x) Chlorine Residual - Combined (daily at plant tap / entry point)
(y) Chlorine Residual - Free (daily in distribution system)
(z) Chlorine Residual - Combined (daily in distribution system)

- Report to one decimal place.
- If more than one sample is collected in any one day then report the lowest result unless both free and combined chlorine residuals are being reported. In that case report the lowest residual for the type of chlorination being conducted and its associated alternative value.

Example: free chlorination is being practiced; three samples were collected in one day in the distribution system as follows-

	Free chlorine	Combined chlorine
1230 Main Street	1.2 mg/L	0.2 mg/L
2455 First Street	1.4 mg/L	0.1 mg/L
7893 Third Street	1.0 mg/L	0.3 mg/L

In column (y) you would report 1.0 mg/L and in column (z) you would report 0.3 mg/L and not 0.1 mg/L.

Public water systems using chlorine dioxide as a primary disinfectant shall report the chlorine dioxide level of a daily sample collected at a representative point in the distribution system in column (y) of the MOR. Additionally:

- report to at least one decimal place
- if more than one sample is collected in any one day, report the other sample(s) in the comment section.

Note: Total chlorine residual analysis is to be performed at the time that total coliform distribution samples are collected per OAC 3745-81-70 (E). If the free chlorine residual analysis was also performed, then this data (free and combined) should be considered when reporting the minimum level in the distribution system for the day.

References

OPR-02-002 Chlorine monitoring and compliance tracking (Pending)

OAC 3745-83-01 (F)(2)

OAC 3745-83-01(G) (2); OAC 3745-81-74 for surface water monitoring

(aa) Chlorine Residual -Total; # of Samples

Report how many tests for total chlorine were performed during the month (this is equal to the number of routine and repeat total coliform samples that were collected). Report how many tests for total chlorine residual were performed during the month (shall be measured at least at the same points in the distribution system and at the same time as routine and repeat total coliforms are sampled. Therefore, the number should be at least equal to the number of total coliform samples that were collected during the month).

Reference

OAC 3745-81-70 (E) (1)

(bb) Chlorine Residual -Total; Average Value

- Report the average value of all the tests performed from aa above.
- Report to one decimal place.

References

OAC 3745-81-10

OAC 3745-81-70 (E) (2)

(cc) and (dd) Chlorite / Chlorine Dioxide (Distribution Sampling)

Public water systems that feed chlorine dioxide have to *routinely* monitor their distribution system for chlorite with a monthly three sample set. Additional, *follow-up*, three sample set(s) will have to be collected if the chlorite MCL is exceeded at the entry

point.

Public water systems that feed chlorine dioxide have to monitor their distribution system for chlorine dioxide with a *follow-up*, three sample set if the MRDL is exceeded at the entry point.

Place an "X" in the appropriate column (cc) or (dd) to identify whether chlorite or chlorine dioxide is being monitored. Proceed to instruction (ee)(ff).

NOTE: in the event that chlorite and chlorine dioxide monitoring occurs simultaneously then annotate the form as necessary to report both parameters (utilize the extra space provided in the comments section).

References

OAC 3745-81-10; OAC 3745-81-23(M)

(ee) and (ff) Routine / Follow-Up (Distribution Sampling)

Public water systems that feed chlorine dioxide have to collect routine monthly samples in the distribution system for chlorite. Additional, follow-up, samples may be required for chlorite or chlorine dioxide. Place an 'x' in the appropriate column to identify the type of sample being collected. Proceed to instruction (gg)(hh)(ii)(jj)(kk).

Reference

OAC 3745-81-23(M)

(gg) First Customer (0 hours) [FC00x]

(hh) First Customer (6 hours) [FC00x]

(ii) First Customer (12 hours) [FC00x]

(jj) Average Residence Time [AT00x]

(kk) Maximum Residence Time [MT00x]

These columns are used to report either chlorite or chlorine dioxide three sample sets that are collected in the distribution system. Sampling shall occur as follows:

Three sample set for chlorite

- Collect one sample near the first customer (sample monitoring point FC00x), enter result in column (gg).
- Collect one sample at a location representative of average residence time (sample monitoring point AT00x), enter result in column (jj).
- Collect one sample at a location representative of maximum residence time

(sample monitoring point MT00x), enter result in column (kk).

Where “x” is a number associated with that sampling location, per your D/DBP sample monitoring plan.

Three sample set for chlorine dioxide

If either chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no additional points of chlorination beyond the entry point (i.e., no booster chlorination), the public water system shall take the three samples as close to the first customer as possible, at intervals of at least six hours. Utilize columns (gg), (hh) and (ii). Otherwise, the three sample set must be taken at the locations as described for chlorite.

Reference

OAC 3745-81-70(F)

(II) Comments

Provide annotations as necessary.

Bromate Monitoring (Entry Point)

Bromate must be reported by the laboratory on the chemical SSR. Bromate is optionally allowed to be reported in the comment section on the day(s) that the sample(s) are collected. The following notation should be used “Bromate at entry point = ____ mg/L.”

Water Plants that use ozone must conduct monthly bromate monitoring at the entry point. The sample shall be collected while the ozonation system is operating under normal conditions. During months in which more than one sample is collected, the monthly result shall be the average of all samples.

Compliance with the MCL for bromate shall be based on a running annual arithmetic average, computed quarterly, of monthly samples. If the MCL is exceeded then public notification is to occur in accordance with OAC 3745-81-32 and the Director is to be notified in accordance with OAC 3745-81-75.

If, during the first year of monitoring, any individual quarter’s average will cause the running annual average to exceed the MCL, the public water system is in violation at the end of that quarter.

Failure to complete the required monitoring is a monitoring violation. The public water system will be in violation for the entire period covered by the running annual average. If a public water system fails to complete twelve consecutive months of monitoring, compliance with the MCL for the last four-quarter compliance period shall be based on an average of the available data.

Reduced monitoring: public water systems required to analyze for bromate may reduce

monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L, based upon representative monthly bromide measurements for one year. The public water system must continue bromide monitoring to remain on reduced bromate monitoring. The public water system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/L, the public water system shall resume routine monitoring.

Reference
OAC 3745-81-23(L)

4. **Signature and certification number of Operator of Record**

- The Operator of Record is to print their name and certification number followed by their signature and date. OR
- The Operator of Record or delegate shall PIN and submit the MOR through eDWR.

The monthly operating report is to be submitted to Ohio EPA by the tenth day of the following month.

Operational Monitoring as reported on Ohio EPA Form 5002

Minimum Required Operational Monitoring for Public Water Systems as required by Ohio Administrative Code 3745-83-01(F)

Ref	Water Analysis	Reporting Criteria	Plant Tap / Entry Point (except as noted)
(w) or (x)	Chlorine Residual: free <u>or</u> combined	If water is treated with chlorine	Daily ^{1,2,3,4}
(y) or (z)	Chlorine Residual: free <u>or</u> combined	If water is treated with chlorine	Daily ^{3,4} (in distribution)
(d)	Fluoride	If fed	Daily
(c)	Fluoride	If fed	Monthly (prior to fluoridation; "raw")
(p)	Phosphorus Total	If phosphate is fed for sequestration	Monthly
(q)	Orthophosphate	If fed for self-initiated corrosion control	Monthly
		If fed for formal corrosion control (OEPA Pb/Cu rules)	Bi-weekly
(k)	pH ¹	If adjusted for formal corrosion control (OEPA Pb/Cu rules)	Bi-Weekly
		If adjusted for stability	Daily
		If lime softening or membrane treatment is provided	Daily
(m)	Alkalinity Total	If lime softening or membrane treatment is provided	Daily
		If adjusted for formal corrosion control (OEPA Pb/Cu rules)	Bi-weekly
(l)	Alkalinity Phenolphthalein	If lime softening treatment is provided	Daily
(n)	Alkalinity Stability	If lime softening or membrane treatment is provided	Weekly
(o)	Hardness (community systems only) ⁵	If treatment = Ion Exchange Softening, pop ≤ 250	Monthly
		If treatment = Ion Exchange Softening, pop > 250	Weekly
		If treatment = lime softening or membranes	Daily
(r1) (r2)	Iron (community systems only) ⁵	If treatment consists of Iron Removal; Pop. ≤ 250	Weekly test kit with monthly lab split Sample, or Weekly at Certified Lab
		If treatment consists of Iron Removal; Pop. > 250	5 days/wk test kit with monthly lab split Sample, or Weekly at Certified Lab
(s1) (s2)	Manganese (community systems only) ⁵	If treatment consists of Manganese Removal; Pop. ≤ 250	Weekly test kit with monthly lab split Sample, or Weekly at Certified Lab
		If treatment consists of Manganese Removal; Pop. > 250	5 days/wk test kit with monthly lab split Sample, or Weekly at Certified Lab
(t)	Copper	If a copper compound is applied to the surface water supply	Weekly (monitoring is to continue for at least one month after the compound has been applied)

1. Surface Water Systems shall also conduct monitoring in accordance with OAC 3745-81-74 and report on Form 5109; Ground Water Systems that provide 4-log inactivation of viruses shall also conduct monitoring in accordance with OAC 3745-81-43 and report on modified Form 5109.
2. Satellite Systems without supplemental chlorination do not need to monitor at the entry point.
3. Non-community Ground Water Systems whose distribution system is solely interior plumbing in a single building only need to collect one representative sample daily (either entry point or distribution).
4. Non-community, ground water systems that utilize chlorine solely for the oxidation of Fe, Mn or H₂S and are not required to maintain a residual in the distribution system do not have to perform this monitoring.
5. Non-Community systems treating for an MCL may be required to perform this monitoring per a formal action of the Director.

Operational Monitoring as reported on Ohio EPA Form 5002

Inorganic Disinfection Byproducts and Disinfectant Residuals Monitoring required by Ohio Administrative Code 3745-81-23 and 3745-81-70

Ref	Water Analysis	Reporting Criteria	Sample Location		Rule Reference
			Entry Point	Distribution	
SSR	Bromate*	If Ozone is fed	Monthly	NA	OAC 3745-81-23(L)
E.P. (v) Dist. (cc)-(kk)	Chlorite	If chlorine dioxide is fed	Daily	Monthly - three sample set (additional three sample set(s) required if the entry point sample is > MCL)	OAC 3745-81-23(M)
E.P. (u) Dist. (cc)-(kk)	Chlorine Dioxide	If chlorine dioxide is fed	Daily	As required by the Director through detail plan approval. (three sample set(s) required if the entry point sample is > MRDL)	OAC 3745-81-70(F)
E.P. (n/a) Dist. (aa)-(bb)	Chlorine Residual Total	All community PWSs and noncommunity systems that serve 1,000 or more	n/a	to be monitored concurrently with the collection of total coliform compliance (routine and repeat) bacterial samples	OAC 3745-81-70(E)(1)

*Bromate is to be reported on the Chemical SSR by a certified laboratory and does need to be reported on Ohio EPA Form 5002.