

**(THIS POLICY DOES NOT HAVE THE FORCE OF LAW)**

**Chlorine monitoring and compliance tracking**

Division: DDAGW  
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**I. PURPOSE:**

The purpose of this policy is to provide the Division of Drinking and Ground Waters (DDAGW) interpretation of certain requirements of Ohio Administrative Code (OAC) rules regarding monitoring and reporting for chlorine residual. This policy is intended to assist public water systems required to maintain a chlorine residual and DDAGW staff who monitor compliance of those systems.

**II. BACKGROUND:**

Noncommunity public water systems serving a population of at least 1000 people and all community public water systems are required by paragraph (C) of OAC rule 3745-83-01 to maintain a minimum chlorine residual of at least 0.2 milligrams per liter (mg/l) free chlorine (or 1.0 mg/l combined chlorine) at representative points throughout the distribution system. Systems that provide water treated with chlorine are required by paragraph (G) of OAC rule 3745-83-01 to monitor for free chlorine residual and combined chlorine residual at least once every day that water is available to the public at each entry point to the distribution system and a representative point in the distribution system, and to report the data pursuant to paragraph (I). Additionally, OAC rules 3745-81-72 and 3745-81-74 establish minimum chlorine residual and monitoring requirements for systems that use surface water as a source. These requirements reflect the critical importance proper maintenance of a disinfection residual plays in ensuring delivery of safe drinking water to consumers.

Public water systems often raise questions about monitoring chlorine residuals on weekends and holidays. Other questions arise about locating “representative points” for monitoring chlorine residual and monitoring for satellite systems. Also, the response by district office staff to reported low chlorine residuals or lack of chlorine residual monitoring has not always been uniform. Therefore, this policy has been issued to help public water systems maintain compliance by answering questions frequently raised and to provide direction to DDAGW staff on responding to reported low chlorine residuals or lack of chlorine residual monitoring to promote consistent application of the rule requirements.

**II. POLICY:**

- 1) Use of continuous chlorine recorders  
Public water systems may use continuous recorders for monitoring free and combined chlorine residual on weekends and holidays at the entry point to the distribution system and in the distribution system in lieu of taking grab samples. The installation of a continuous monitor will be evaluated on a case by case basis, subject to the following criteria:

- a) All systems required to disinfect must continue to comply with all applicable sections of OAC rule 3745-81-70.
- b) Systems using surface water as a source must continue to comply with monitoring requirements for the entry point set forth in OAC rule 3745-81-74.
- c) Monitoring must be completed separately at the entry point to the distribution and in the distribution system as required by OAC rule 3745-83-01, except for satellite systems that do not employ supplemental disinfection where monitoring is only required within the distribution system.
- d) Continuous monitors must utilize a method and have a detection limit meeting the requirements of OAC rule 3745-81-27.
- e) For all noncommunity public water systems serving a population of at least 1000 people, and all community and surface water public water systems, the output of the continuous monitor shall be read at least daily and recorded in operational records in accordance with OAC rules 3745-81-74(D) and 3745-83-01(G) to verify the minimum required chlorine residual is being maintained. In lieu of manually reading the continuous monitor, with prior written authorization from the Ohio EPA District Office, it may be acceptable for an alarm and notification system to be employed such that an operator can respond to any situation resulting in the minimum chlorine residual not being maintained.
- f) All continuous monitors should be equipped with a chart recorder or other recording device. The lowest reading recorded shall be reported on the Monthly Operating Report in accordance with OAC rule 3745-83-01(I) and will be used to determine compliance with minimum disinfection residual requirements.
- g) Continuous monitors should be calibrated at a minimum of once every three months or according to the manufacturers recommendations, whichever is more frequent, or when verification of calibration conducted in accordance with paragraph h of this policy indicates a deviation of ten percent or greater.
- h) Calibration of continuous monitors located at the plant tap must be verified daily against a field kit or bench-top meter if the public water system is certified to conduct chlorine analysis. Otherwise, calibration of the continuous monitors should be verified at least weekly against a field kit or

bench-top meter. Results of the verification should be noted in operational records.

- i) Field kits or bench-top meters used in the verification of calibration of continuous meters need to have calibration checks in accordance with certified laboratory requirements if the public water system is certified for to conduct chlorine analysis and at least once every three months for public water systems not certified to conduct chlorine analysis.
  - i) Continuous chlorine monitors should be installed in an area that is protected from the weather and is not subject to flooding, excessive vibration, or any other condition that could adversely affect the accuracy of the monitor.
- 2) Satellite water systems  
Satellite water systems that do not supplement chlorine do not have to collect a chlorine residual at the entry point to the distribution system.
  - 3) Frequency of chlorine residual monitoring  
OAC rule 3745-83-01 requires monitoring for free and combined chlorine residual at least once every day that water is available to the public. "Every day" means seven days per week. Systems do not have to monitor for chlorine residual on days they are not serving water, such as schools on holidays. Public water systems must measure chlorine residual at the same points in the distribution system and at the same time total coliforms are sampled in accordance with OAC rule 3745-81-70(E)(1).
  - 4) Representative points for chlorine residual monitoring  
Chlorine residual is to be measured at representative points throughout the distribution system as required by OAC rule 3745-83-01. All service connections are considered to be representative points for the purpose of chlorine residual monitoring. A fire hydrant is not considered to be an appropriate monitoring location.
  - 5) Reporting of chlorine residual monitoring  
Public water systems must report the lowest chlorine residual on the monthly operation report form 5002 in accordance with OAC rules 3745-81-74(D) and 3745-83-01(I).
  - 6) Evaluation of reported distribution chlorine residual monitoring  
Ohio EPA staff who evaluate operations information reported by public water systems should call a water system whenever two days out of a month are below the minimum required chlorine residual within the distribution system or the water system failed to monitor/report. The water system should be informed of the need to correct their chlorine problem. Failure to maintain adequate residuals in more than

five percent of the samples each month for any two consecutive months will result in the district issuing a violation letter to the water system for failure to maintain the minimum chlorine residual in accordance with 3745-83-01(C) or 3745-81-72(B), as appropriate.

7) Evaluation of reported entry point chlorine residual monitoring

Public water systems currently using ground water or purchased water that provide supplemental disinfection do not have specific disinfection residual requirements at the entry point. When minimum residuals as specified in 3745-83-01 for the distribution system are not maintained at the entry point, it may indicate that proper disinfection is not being maintained at all times and at all points within the distribution system and the public water system should be called. The water system should be informed of the need to maintain adequate disinfection residuals.

For public water systems using surface water the residual disinfectant concentration in the water entering the distribution system shall not be less than 0.2 mg/l free chlorine or one mg/l combined chlorine for more than four consecutive hours, in accordance with 3745-81-72(B)(3). For any month that the required minimum chlorine residual concentration is not maintained in more than four consecutive hours the district will issue a violation letter.

8) Failure to monitor or report

Failure to monitor for chlorine residual or failure to submit the required report shall result in a violation of 3745-83-01 (G -monitoring) or 3745-83-01 (I - reporting) and/or for water systems utilizing surface water a violation of 3745-81-74 (D - monitoring) or 3745-81-75 (C - reporting), as appropriate. A violation letter will be sent for each month that a report is not submitted or monitoring is not conducted.

#### **IV. HISTORY:**

The Division of Drinking and Ground Water initially issued this policy August 23, 2004. The policy was revised on \_\_\_\_\_ to incorporate revisions to OAC rule 3745-83-01 and clarify provisions related to use of continuous chlorine recorders.