



Analytical Requirements for Secondary Treatment with Chlorine Dioxide

In order to report concentrations to Ohio EPA, facilities proposing secondary treatment with chlorine dioxide must be certified for chlorite and chlorine dioxide analysis by an approved method. A list of approved methods may be found in rule 3745-81-27 of the Ohio Administrative Code. Per rule 3745-81-27, the amperometric titrator (SM 4500 ClO₂-E) is approved for analysis of chlorite and chlorine dioxide. While the colorimetric DPD meter (SM 4500 ClO₂-D) is only approved for chlorine dioxide analysis.

Sample Collection Requirements

Chlorine dioxide must be analyzed within 15 minutes of collection and chlorite, if stored at 4°C and preserved with ethylenediamine (EDA) sample must be analyzed within 14 days of collection.

Proficiency Test Requirements

An annual proficiency test (PT) is required for chlorite certification. Annual basis is considered January 1 through December 31 of each year. Regulations regarding proficiency testing requirements can be found in "Ohio EPA Laboratory Manual for Chemical Analyses of Public Drinking Water 2014" and rule 3745-89-03 (A)(3)(d) of the OAC. A provider of PT samples must be accredited by a Proficiency Testing Provider Accreditor that meets the National Environmental Laboratory Accreditation Conference requirements. A list of accredited PT providers can be found at the following address: nelac-institute.org/content/NEPTP/ptproviders.php.

What are the QC Requirements When Using the Amperometric Titrator?

Titrant Standardizations

Titrant standardization procedure must be completed initially upon opening or preparation of titrant and at least once per month thereafter. Each standardization procedure must be dated and recorded. Acceptance Limits are ±5% of the true value. The titrant standardization procedure for Chlorine Analysis by Amperometric (POA) Titration Method in Section 7.0 of the "Ohio EPA Laboratory Manual for Chemical Analyses of Public Drinking Water 2014" may be used. Manufacturer's pre-programmed titrant standardizations may also be used.

Analyst QC Requirements

All certified and operationally certified analysts are required to perform sample analysis at a minimum of at least three days per month.

Certified Analyst Requirements

All certified analysts are required to perform the titrant standardization procedure at least once every three months. Standardizations must be dated and initialed by all certified analysts participating in each standardization procedure.

What are the QC Requirements When Using the Colorimetric DPD Meter?

Verify the Calibration

Currently, there are no calibration verification standards for the colorimetric DPD meter. However, the Ohio EPA's Laboratory Certification Section requires each meter be verified once per month against an amperometric titrator (SM 4500 ClO₂-E), using a split sample collected at the facility providing secondary treatment.

Verification Acceptance Limits

If the observed sample concentration on the DPD meter is greater than or equal to (\geq) 0.40 mg/L, then the sample concentration must be within $\pm 10\%$ of the observed sample concentration on the amperometric titrator. However, if the observed sample concentration on the DPD meter is less than ($<$) 0.40 mg/L, then the observed sample concentration must be within ± 0.04 mg/L of the observed sample concentration on the amperometric titrator.

Any meter unable to meet these requirements must be sent to the manufacturer for maintenance. Note: An amperometric titrator may be used for chlorine dioxide sample analysis during the maintenance period.

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Analyst QC Requirements

All certified and operationally certified analysts are required to perform sample analysis at a minimum of at least three days per month.

Certified Analyst Requirements

All certified analysts are required to perform the calibration verification procedure at least once every three months. Calibration verifications must be dated and initialed by all certified analysts participating in each verification procedure.

Required Verification Documentation

Laboratories must use the correct bench sheet for the appropriate verification procedure. The benchsheets can be found at the following website: epa.ohio.gov/ddagw/labcert.aspx#161815008-resources-and-reporting.

Contact

If any questions, please contact a member of the Ohio EPA's Laboratory Certification Section. Contact information can be found at the following website: epa.ohio.gov/ddagw/labcert.aspx#161814876-contacts.