



North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

March 11, 2015

To: Certified Laboratories
Subject: North Carolina Total Residual Chlorine Detection and Compliance Levels

Since we frequently get questions regarding the approved methods, instrumentation and reporting procedures for Total Residual Chlorine (TRC), I would like to re-state the Division of Water Resources' policies on these matters. In a letter dated August 14, 2001, the North Carolina Division of Water Resources (previously Division of Water Quality) notified National Pollutant Discharge Elimination System (NPDES) permittees that wastewater treatment facilities with TRC effluent limits would be required to utilize an instrument or analytical method that will detect and measure TRC concentrations to levels that are below the permit discharge limit by July 1, 2002. [Note: TRC permit limits are typically set between 17 to 28 µg/L for discharge to freshwater and 13 µg/L for discharge to saltwater]. This requirement was based on an Environmental Protection Agency (EPA) audit of the NC enforcement program. It was also necessary to ensure water quality protection and compliance with state monitoring regulations [15A NCAC 2B .0505 (e) (4)]. This letter further prescribed the following:

- *Acceptable EPA-approved methods for low-level TRC analyses include the Amperometric Titration Method and the DPD Colorimetric Method.* [Note: Permit levels of 13, 17 and 28 µg/L require that a low-level spectrophotometric/colorimetric method be used.]
- *If a facility has no effluent limit for TRC (just a monitoring requirement), then use of a hand-held meter, sometimes described as a pocket colorimeter, and the reporting of <100 µg/L as a TRC value is acceptable.* [Note: If a facility has a permit monitoring limit >0.1 mg/L (i.e., 100 µg/L), it is acceptable to use a pocket colorimeter.]

In a subsequent letter dated May 1, 2008, the Division acknowledged that there were difficulties with TRC measurement at the levels required by the discharge permits and notified NPDES permittees that a 50 µg/L compliance level would be adopted beginning with March, 2008 DMR submittals. This letter also prescribed the following:

- *Implementation of the 50 µg/L compliance level would not change the analysis, annual verification of meter performance or data reporting, but simply how the reported values will be evaluated by the Division from a compliance standpoint.*
- *Permittees will still be required to report actual results on the monthly DMR submittals, but for compliance purposes, all TRC values below 50 µg/L will be treated as zero. For example, if the facility has a TRC permit limit of 17 µg/L and reports a TRC value of 40 µg/L on the DMR, this value will be considered compliant.*

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The following table is meant to summarize the information above and to provide additional guidance on proper methodology and equipment depending upon a facility's permit limit.

Permit Limit	No Limit	Limit is >100 µg/L	Limits of 13, 17, or 28 µg/L
Acceptable Instruments	Pocket colorimeter*	Pocket colorimeter*	Spectrophotometer/Amperometric Titrator***
Reporting Level	<100 µg/L	< permit limit (e.g., <200 µg/L)	< permit limit (e.g., <13 µg/L)
Compliance Level	**	**	50 µg/L

* Any of the approved instruments may be used (i.e., spectrophotometer, amperometric titrator) including the pocket colorimeter.

** Since the permit limit or allowable reporting level is >50 µg/L, the 50 µg/L compliance level does not apply here.

***Only the low-level spectrophotometer or amperometric titrator may be used. The pocket colorimeter may not be used for permit limits of 13, 17 or 28 µg/L.

The letters referenced in this memorandum can be viewed on the North Carolina Wastewater/Groundwater Laboratory Certification (NC WW/GW LC) website at: <http://portal.ncdenr.org/web/wq/lab/cert/nonfield/methods>. If you would like to request a copy of these letters or if you have additional questions, please contact me at (919) 733-3908 or dana.satterwhite@ncdenr.gov.

Sincerely,



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