



MEMORANDUM

TO: All Alaska Drinking Water
Certified Laboratories

DATE: August 20, 2019 (replaces March 9,
2009 edition)

FROM: Patryce McKinney, MBA 
Drinking Water Certification Authority

SUBJECT: **THM and VOC analysis by
502.2, 524.2, 524.3, 524.4**

This letter serves to identify issues pertaining to volatile analysis in drinking water, and to offer clarification of the State of Alaska Department of Environmental Conservation (ADEC) Drinking Water Laboratory Certification Program (LCP) protocols and the EPA regulations pertaining to them.

- **Separate THM and VOC Reporting**

Total trihalomethanes (THM) and Volatile Organic Compounds (VOCs) are analyzed by the same method, but they have critically different purposes for verifying public water system (PWS) compliance.

PWSs are required to sample for VOCs at the entry point to the distribution system. Samples may be collected at any time during the specified monitoring period for the PWS. The 21 regulated contaminants for VOC samples that are listed in 40 CFR 141.61 are the only contaminants that are submitted to the Drinking Water Program as VOCs. Results for VOC analyses are required to be submitted to CMDP as a separate sample number and not include THM analysis.

PWSs are required to sample for THMs at specific locations in the distribution system and during a specified time period that has been communicated to the PWS (40 CFR 141 Subpart L). THM results include both the total and the individual analytes. Results for THM analyses are required to be submitted to CMDP as a separate sample number and not as part of a VOC analysis.

LCP Protocol: Results (samples or trip blanks) containing both VOCs and THM that are submitted under the same sample number will be rejected, and the LCP will receive notification of the incident. Unregulated VOC results submitted to CMDP will also be rejected.

- **Trip (Field Reagent) Blanks**

The ADEC requires trip blank analysis for all THM results above the Practical Quantitation Limit (PQL) or Method Reporting Limit (MRL) submitted for compliance purposes.

The EPA issued an Alternative Test Procedure (ATP) stating that trip blanks would no longer be required for THM analysis on January 30, 2008; however, this is **not** acceptable in the state of Alaska. The ADEC chose not to adopt the ATP due to historical incidents of chloroform contamination in these blanks and did notify all laboratories certified by the state of Alaska of this decision on February 8, 2008.

Per the EPA *Manual for the Certification of Laboratories Analyzing Drinking Water: Criteria and Procedures, Quality Assurance, 5th edition, section 3.18*, the EPA may authorize ATPs for use in a state “with the written permission of the State.”

LCP Protocol: Samples that have THM and/or VOC hits above the reporting limit and do not have a trip blank will be rejected.

- **Monitoring Trigger Level for Regulated VOCs**

As required in the EPA *Manual for the Certification of Laboratories Analyzing Drinking Water: Criteria and Procedures, Quality Assurance, 5th edition, table IV-8*, the monitoring trigger level for all regulated VOCs is 0.5µg/L (0.0005mg/L). A compliance sample measurement of a concentration above the monitoring trigger level has a significant impact on a Public Water Source’s future monitoring requirements. Therefore, all hits over 0.5µg/L must be reported. Laboratories must be able to detect and report down to this level in order to comply with these regulations.

There have been several instances in which the reporting levels were higher than allowed; this is especially apparent for compounds such as dichloromethane.

LCP Protocol: A reporting limit of 0.5ug/L (0.0005mg/L) is required for all regulated VOCs. The only time higher reporting limits will be accepted is when a dilution factor is necessary due to high concentrations of a target analyte, or the sample is not for regulatory purposes.

Please note that elevated reporting limits due to unnecessary dilutions do not apply.

- **Contamination - Target analytes detected in the sample and associated trip blank(s)**

Per the EPA *Method 524.2, revision 4.1 (1995), section 9.7*, “any unacceptable contamination must be identified and corrected. Laboratories should immediately take measures to identify and correct any issues related to laboratory introduced contamination of samples and/or trip blanks.”

LCP Protocol: Any sample analysis where there are detects above the trigger level in the associated trip blank will invalidate the sample at the discretion of the Drinking Water Compliance personnel, unless the sample itself is non-detect for that analyte.

All of the above reporting requirements have been in place for quite some time now. The Drinking Water Certification office cannot condone non-compliance of these testing requirements. Each incident will be dealt with immediately and may result in a downgrade of the laboratory’s certification status.

Thank you for your time and attention to these critical issues. Please contact the LCP if there are any questions relating to this matter.