COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Senator William X. Wall Experiment Station

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ELLEN ROY HERZFELDER
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

February 18, 2004

Dear Laboratory Director:

The Drinking Water Program (DWP) of the Massachusetts Department of Environmental Protection (DEP or "Department") is in the process of adopting emergency regulations that will require monitoring of public drinking water systems for perchlorate in order to collect occurrence data to determine whether a perchlorate maximum contaminant level (MCL) is needed. The accompanying letter from the DWP describes this emergency monitoring program in more detail.

Laboratories wishing to be approved by DEP to participate in this monitoring program must meet the following perchlorate analytical requirements:

1. The laboratory must be approved by the United States Environmental Protection Agency (EPA) for monitoring perchlorate under the UCMR (40 CFR 141.35) and have maintained Massachusetts or resident state certification for drinking water analysis using an ion chromatography method. The list of laboratories approved by EPA for UCMR perchlorate monitoring can be found at:

   http://www.epa.gov/safewater/standard/ucmr/aprvlabs.html#percanchor.

   Note that EPA approval of UCMR perchlorate laboratories was extended until January 28, 2005 (see enclosed letter).

2. The laboratory must perform the analysis using EPA Method 314.0, Revision 1.0, November 1999, *Determination of Perchlorate in Drinking Water Using Ion Chromatography*, as modified to achieve the performance requirement of a minimum reporting level (MRL) for perchlorate of 1.0 μg/L.

3. The laboratory must demonstrate to the DEP that it can achieve the stringent performance requirements of this regulation by:

   a) Submitting to the Department's Laboratory Certification Office (LCO) at the Senator William X. Wall Experiment Station (WES) its Standard Operating Procedure (SOP) for the analysis of perchlorate for this monitoring program using EPA Method 314.0 (note: the SOP must clearly describe **all** instrumental and sample processing procedures used to achieve a perchlorate MRL of 1.0 μg/L).

b) Submitting to the LCO its Initial Demonstration of Capability (IDC) for EPA Method 314.0 as described in Section 9.2 of the method except that: 1) the initial demonstration of accuracy and precision must be determined using seven laboratory fortified blanks (LFBs) at a perchlorate concentration of 5.0 μg/L or lower; 2) the method detection limit (MDL) must be determined using seven LFBs at a perchlorate concentration of 1.0 μg/L; 3) the matrix conductivity threshold (MCT) must be determined at a perchlorate concentration of 5.0 μg/L or lower; and 4) a perchlorate MRL of 1.0 μg/L must be verified by recovering 70-130% of 1.0 μg/L perchlorate spiked in a mixed common anion solution displaying a conductivity within ± 10% of the MCT.

c) Demonstrating to the LCO that it can achieve a perchlorate MRL of 1.0 μg/L with a perchlorate MDL approximately 1/3 of the MRL.

d) Passing a proficiency test (PT) for the analysis of low-level perchlorate in potable water in a study currently being planned by the LCO (note: this study will be conducted soon after the LCO completes the initial approval of laboratories for perchlorate analysis).

4. The laboratory must run a 0.5-μg/L perchlorate MDL-check standard daily and obtain perchlorate recoveries of 70-130% to verify that the instrument can distinguish the difference between this standard and the instrument noise (note: this standard is **not** part of the initial calibration); this requirement is also included in the EPA-Region 1 guidance on low-level perchlorate analysis. The lowest initial calibration standard must be at a perchlorate concentration of 1.0 μg/L or lower.

5. The laboratory **must meet and fully document all the quality control requirements** for each analysis batch of field samples as specified in Sections 8.1-8.3, 9.3, 9.4, and 10.2-10.4, and in Tables 6 and 7 of the method **except that**:

a) The instrument performance check solution (IPC) consisting of a mixed common anion solution displaying a conductivity within ± 10% of the MCT must be spiked at a perchlorate concentration of 5.0 μg/L or lower; IPC acceptance criteria are as specified in the method (e.g., perchlorate recovery must be 80-120%).

b) The initial calibration check standard (ICCS) must be at a perchlorate concentration of 1.0 μg/L; perchlorate recovery for the ICCS must be 75-125% as specified in the method.

c) The LFBs must be spiked at a perchlorate concentration of 1.0 μg/L and analyzed at the frequency of one per batch of 20 or fewer field samples; perchlorate recovery for the LFB must be 85-115% as specified in the method.

d) The conductivity of each field sample must be measured, documented, and reported along with the perchlorate concentration (note: the conductivity meter calibration must be verified or established, and documented with each analysis batch as specified in Section 10.4 of the method).

e) The laboratory fortified sample matrix (LFM) must be performed on the field sample having the highest conductivity within the analysis batch. The LFM must be spiked at a perchlorate concentration of 1.0 μg/L and analyzed at the frequency of one per batch of 20 or fewer field samples (perchlorate recovery for the LFM must be 70-130%). If the 1.0-μg/L perchlorate spike is less than the measured native perchlorate level of the unfortified sample matrix, the laboratory must repeat the LFM spiked with perchlorate at a concentration approximately equal to its native perchlorate concentration.

f) All field samples with measured native perchlorate concentrations between 0.8 μg/L and 2.0 μg/L must be retested with and without a perchlorate spike approximately equal to the native perchlorate concentration. The perchlorate concentration in the initial test and retest of the field sample as well as the perchlorate spike concentration and recovery must be documented and reported.

g) Perchlorate concentrations measured in field samples between the MDL and the MRL (1.0 µg/L) must be reported as estimated (J) values (i.e., perchlorate is positively present, but tentatively quantified); this requirement is also included in the EPA-Region 1 guidance on low-level perchlorate analysis.

h) Perchlorate concentrations measured in field samples must be qualified as estimated (J) in the report if any of the quality control requirements specified above for the analysis batch are not met [note: the quality control requirement(s) not met must also be reported].

NOTE: Laboratories planning to seek Department approval for this perchlorate monitoring program must indicate their intention by FAX (978-688-0352) or by e-mail to John Bardzik at *john.bardzik@state.ma.us* by February 25, 2004. Please include the name and address of your laboratory, the name and telephone number of the contact person, and the target date for your submission of the required documentation to the LCO. The LCO will acknowledge receipt of all submissions.

If your laboratory was not approved for perchlorate analysis under the UCMR but is certified by Massachusetts or your resident state for drinking water analysis using an ion chromatography method, can meet the other perchlorate analytical requirements specified above, and is interested in being approved for perchlorate analysis, please notify John Bardzik as described above. The LCO will be assessing the overall laboratory capacity for perchlorate analysis that could be made available to support this emergency monitoring program.

Send the required documentation for DEP-LCO approval of your laboratory for perchlorate monitoring to:

John Bardzik
Massachusetts Department of Environmental Protection
Senator William X. Wall Experiment Station
37 Shattuck Street
Lawrence, Massachusetts 01843

If you have any questions regarding this program, please contact John Bardzik at 978-682-5237, ext. 331.

Sincerely,

Oscar C. Pancorbo, Ph.D.
Division and Station Director
Division of Environmental Analysis
Senator William X. Wall Experiment Station

cc: Arleen O'Donnell, Deputy Commissioner, BPP, DEP, Boston
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