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**Vinyl-Lined Asbestos-Cement Pipe (VLAC) Monitoring Program SOP  
for Tetrachloroethylene, a/k/a Perchloroethylene (PCE)**

Effective Date: May 2006  
Supersedes SOP: January 1993

DWP SOP#: DWP/SOP06-4

Program Applicability: All Boston and Regional Programs

Approved by:

(signed original on file in Boston office)

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Glenn Haas, Director  
Division of Watershed Management

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**PURPOSE:** This document summarizes and updates the drinking water monitoring requirements for tetrachloroethylene, also called perchloroethylene or PCE, originating from vinyl-lined asbestos-cement (VLAC) pipe. The purpose of this Standard Operating Procedure (SOP) is to assist the Drinking Water Program in determining when sampling for tetrachloroethylene can be reduced or eliminated.

**APPLICABILITY:** This SOP applies to all Public Water Systems (PWS) that currently have or have historically used vinyl-lined asbestos-cement (VLAC) pipe as part of their distribution system.

**Massachusetts Department of Environmental Protection  
 Drinking Water Program  
 Standard Operating Procedure (SOP)  
 for  
 Monitoring Frequency for Tetrachloroethylene, also called Perchloroethylene (PCE)  
 in Drinking Water**

**Background**

In an effort to improve the control of PCE in drinking water, and ultimately reduce risks to human health, a revision of the existing SOP for monitoring requirements for PCE in drinking water was necessary to clarify and communicate changes that have occurred since the January 30, 1993 SOP. The primary purpose of the SOP is to provide DWP staff with guidance for water systems that wish to reduce or eliminate their sampling and analysis for PCE that leach from vinyl-lined asbestos-cement (VLAC) pipe.

It is the standard operating procedure for the Drinking Water Program (DWP) to require the actions described below based on the monitoring results and pipe conditions described:

**Monitoring Frequency for PCE in Drinking Water**

Tetrachloroethylene (PCE) Levels	Pipe Status	Required Action
Three consecutive annual samples with no detection (ND) ( <i>defined as below the reporting limit</i> )	All (VLAC) pipe has been replaced.	No further monitoring is required.
Three consecutive annual samples with no detection (ND) ( <i>defined as below the reporting limit</i> )	Pipe has been looped, or pipe has NOT been looped and a bleeder is being used.*	1. Monitor once every three years. <b>or</b> 2. Monitor once every nine years if results are ND for 3 consecutive 3-year compliance periods.
Three consecutive annual samples results less than 5.0 ug/l.	Pipe has been looped, or pipe has NOT been looped and a bleeder is being used.*	Monitor once per year. Periodic flushing is recommended.
Sample results are greater than 5.0 ug/l.	Pipe has been looped, <i>or</i> pipe has NOT been looped and a bleeder is being used.* <i>(If no bleeders the system should be on an enforceable plan to install bleeders or other permanent compliance option)</i>	1. Monitor every six months. 2. Conduct an ongoing flushing and bleeding program. 3. Submit a plan to reduce PCE levels below the MCL of 5.0 ug/l, preferably by replacement of all VLAC pipe.

\* If concentrations exceed 5 ug/l at any time, a meter must be installed on the bleeder and quarterly-metering records must be submitted to the drinking water program.

**Notes:**                    *The Maximum Contaminant Level (MCL) = 5.0 ppb.  
 The Method Reporting Limit (MRL) = 0.5 ppb.  
 ND = No Detection*

It is the standard operating procedure for the DWP to require additional PCE monitoring based on the following: Any major change in conditions, including but not limited to, changes in flow dynamics, alteration in pipe integrity (*e.g.*, cutting the pipe), that may result in increased PCE in the drinking water. In addition, monitoring for the presence of asbestos after a major change in conditions may also be required (310 CMR 22.06(5)). All results must be submitted to the appropriate regional office where staff will determine specific requirements.

It is the standard operating procedure for the DWP to strongly discourage new connections to unused laterals that contain VLAC pipe. DWP will consider the new connection of an unused lateral that contains VLAC pipe a substantial modification and in accordance with 310 CMR 22.04 required that the public water system obtain written approval from MassDEP prior to connection.

It is the standard operating procedure for the DWP to consider discontinuing the use of bleeders in the systems, if the following conditions apply:

1. A written request is made to the MassDEP requesting an alternate sampling schedule.
2. The concentrations of PCE at the bleeder have been less than 5 ug/l for more than 3 years.
3. The PWS agrees to shut off the bleeder and test quarterly for one year.
4. The PWS agrees that if tetrachloroethylene levels rise above 5 ug/l at any point in the quarterly sampling, bleeding **must be immediately reinstated** and monitoring must be conducted twice per year. In addition, a meter must be installed on the bleeder and quarterly-metering records must be submitted to the DWP.

Regional DWP staff will review the written request and decide whether an alternate sampling schedule is appropriate and a decision will be provided in writing.