

Standard Operating Procedure

Paragon Laboratories, Inc.
12649 Richfield Court
Livonia, MI 48150

SOP:

N0077

Revision:

1

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Effective Date:

05/05/10 00:00:00

Sampling Drinking Water for Volatile Organic Compounds (VOCs) and Trihalomethanes (THMs) Analysis using USEPA Method 524.2

1.0 SCOPE AND APPLICATION

1.1 REFERENCE INFORMATION

Discipline:	Operations, Field, Sampling
Related Documents:	SLP-S0020, SLP-S0021, SOP-N0031, SOP-A0118, REF-R0002
Applicable Programs:	MDEQ, Drinking Water
Regulatory References:	40CFR141

1.2 HOLDING TIMES

- 1.2.1 The maximum holding time for a chilled, dechlorinated, and HCl-preserved sample is 14 days from sample collection.

2.0 SAFETY

- 2.1 CAUTION: Hydrochloric Acid (HCl) is corrosive and can cause immediate skin and eye damage. It can also cause damage to clothing, equipment, etc. Protective gloves and safety glasses are recommended. Flush with plenty of water if exposed. Return the eye-dropper containing the 1:1 HCl solution with sample submission to the laboratory for proper disposal.

- 2.2 Ascorbic acid (AA) is vitamin C, and is not harmful in small quantities.

3.0 EQUIPMENT AND SUPPLIES

- 3.1 Method-recommended "Trip Blanks" should be obtained from Paragon a short time prior to sample collection, and will be analyzed if necessary. (Trip Blanks have a 14-day holding time, and are not required for total THM [TTHM] analysis.)
- 3.2 Two 40-mL clear glass VOA vials with septa caps containing 25 mg of ascorbic acid (AA) each are required per sample (2 vials/sample).
- 3.3 Small dropper bottle containing approximately 4 mL of 1:1 hydrochloric acid (1:1 HCl). [NOTE: Adding 2 drops of 1:1 HCl to each vial drops the pH to <2 and acts to preserve the sample.]
- 3.4 Paper towel
- 3.5 Pen, with water-proof ink

4.0 PROCEDURE

4.1 COLLECT SAMPLES FROM A COLD WATER TAP

- 4.1.1 Remove the aerator/screen from the tap, if there is one present.
- 4.1.2 Open the tap (cold only) and allow the system to flush for about 3-5 minutes at full flow until the water temperature has stabilized and the system has been flushed of stagnant water.

4.2 FILL VIALS (DO NOT RINSE OUT VIALS)

- 4.2.1 Adjust the water flow to a thin gentle stream so no air bubbles are detected.
- 4.2.2 Slowly fill each vial ½ way, making sure not to flush out the dissolving ascorbic acid from the vial.
- 4.2.3 Carefully add 2 drops of 1:1 HCl to each vial using the eye-dropper provided. Finish filling the vial so the water "crowns" at the top of the vial. Cap the vial and invert 3 to 4 times to mix. Be sure

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that the inside of the cap and mouth of the vial do not come in contact with anything but the sample water.

4.2.4 Invert the vial again to make sure no air bubbles are present. If a bubble is present open the vial and add additional tap water to the vial until a headspace-free sample is achieved.

4.3 LABEL AND CHILL THE SAMPLE CONTAINER

4.3.1 Dry the label with paper towel if necessary.

4.3.2 Using a water-proof ink pen, clearly record the sample ID, date and time of collection, and collector on each label.

4.3.3 Immediately chill all samples within 15 minutes of collection to at or below 4 degrees C ($\leq 4^{\circ}\text{C}$) by placing the samples in a sample refrigerator or in a cooler with ice.

4.4 COMPLETE THE CHAIN-OF-CUSTODY RECORD

4.4.1 Complete the Chain-of-Custody Record provided by the laboratory, making sure to fill in as much information as possible and indicate the analysis requested. Protect the form from getting wet and include it with sample submission.

4.5 RETURN SAMPLES TO PARAGON

4.5.1 Return samples promptly after collection to avoid approaching maximum holding time.

4.5.2 Continue to chill samples to $\leq 4^{\circ}\text{C}$ during storage, transport, and/or shipment. Samples must not freeze. Upon receipt by the laboratory, samples must be confirmed to be $\leq 4^{\circ}\text{C}$, and maintained at this temperature until analysis.

4.5.3 When transporting or shipping samples back to Paragon, it is vital that you protect the 40-mL VOA vials from breakage. Pack with an insulation material (Styrofoam, bubble wrap, etc.) around the vials. Also return the eye-dropper containing the 1:1 HCl solution with samples.

4.5.4 When shipping samples, be sure that ice is bagged to prevent leakage from the cooler. Also, be sure there is enough ice for samples to arrive at the laboratory with ice still remaining in the cooler.

5.0 REFERENCES

5.1 USEPA. 1995. Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry. Method 524.2, Revision 4.1. Cincinnati: USEPA.

5.2 USEPA. 2010. Organic Chemicals, Sampling and Analytical Requirements. *Code of Federal Regulations*, Title 40, Part 141.24 of Subpart C - Monitoring and Analytical Requirements. Washington: GPO (e-CFR).

Revision History

Rev	Description of Change	Originator	Source File	Source SOP	Effective Date
0	Initial Release	SLJ-235	SOP-N0077-R0.doc	N0077	05/16/08
1	Initial Release	SLJ-235	SOP-N0077-R1.doc	N0077	05/05/10

Approvals

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