



WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Soil Moisture Corrected Reporting by EPA Method 8000C

Implementation Memorandum #7

To: Interested Parties
From: Dave Bradley, Section Supervisor
Information and Policy Section
Date: February 1, 2008

DB

Key Point of this Memorandum

If you are using a water miscible solvent (for example, methanol) to extract soil volatile organic compounds (VOC), then you need to adjust the solvent volume for soil moisture content, per Section 11.10.5 of EPA Method 8000C. You must start making this solvent volume correction by March 1, 2008.

Background

Water and methanol are miscible; therefore, if you use methanol to extract soil VOCs, then the volume needs to be adjusted for the amount of soil moisture present in the solid sample. Section 11.10.5 (Moisture Corrected Reporting) of EPA Method 8000C¹ (Mar-03) contains details on how to adjust the solvent volume for moisture content. Some labs have not been doing this. If you do not make this adjustment, then the calculated concentration will not be accurate. The amount of error increases as the soil becomes wetter.

¹ Determinative Chromatographic Separations. Method 8000C is not a determinative method but instead provides guidance on analytical chromatography and describes calibration and quality control requirements that are common to all SW-846 chromatographic methods.

This correction needs to be made, regardless of whether you report the test results “as received” or “dry weight”.

What Do I Need to Do to Make the Soil Moisture Correction?

You need to adjust the methanol solvent volume for moisture content, per the equation specified in Section 11.10.5 (p. 64) of EPA 8000C:

$$V_t (\text{uL of solvent-water}) = [\text{mL solvent} + (\% \text{ moisture} \times \text{g sample}/100)] * 1000 \text{ uL/mL}$$

Note: the published equation in Method 8000C has an error (you do not divide the entire numerator by 100; you only divide % moisture x g sample by 100).

When is this Necessary?

If you are doing any type of volatile² organic compound (VOC) and you are using a water miscible solvent (for example, methanol), then you must make this correction. This includes the following analytical methods:

- EPA 8021B,
- EPA 8260B,
- NWIPH-Gx (Gasoline), and
- Volatile Petroleum Hydrocarbons (VPH).

What Regulations Apply?

Under Washington’s Model Toxics Control Act³ (MTCA), you must use EPA SW-846 analytical methods (WAC 173-340-830(3)). Please keep in mind that SW-846 is a “living” document, and that methods change over time. If there are future editions and updates to Method 8000, then you will be required to use them as well.

Questions?

If you have questions, please contact Bob Carrell of Ecology's Manchester Laboratory (360-871-8804, e-mail: rob461@ecy.wa.gov) or Dave Bradley, Toxics Cleanup Program, Policy and Information Section (360-407-6907; e-mail: dbra461@ecy.wa.gov).

² For petroleum, volatile means aliphatic and aromatic constituents up to and including EC12, plus naphthalene, 1-methylnaphthalene and 2-methylnaphthalene (Source: WAC 173-340-200).

³ Chapter 173-340 WAC