STATE OF ALASKA
Department of Environmental Conservation
CONTAMINATED SITES LAB APPROVAL
http://www.state.ak.us/dec/eh/lab/cs/csapproval.htm

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Memorandum

To: All Laboratories Performing AK101 in Soil

From: Lance Morris, CS Certification Officer

Date: February 29, 2008

Re: Soil Moisture Corrected Reporting by EPA Method 8000C

Key Points of this Memorandum

The State of Alaska Department of Environmental Conservation (DEC) will now require laboratories to correct for the solvent volume if using a water miscible solvent for extraction.

When using a water miscible solvent (e.g. 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 April 1, 2008.

Additionally, all VOC samples for the State of Alaska must be methanol preserved at the time of collection. The use of alternate, low level preservation and analysis requires CS program approval on a site-specific basis. This would be primarily for analytes where the lab is unable to meet cleanup levels with methanol.

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 8000C (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. This correction must be made for all methanol preserved soil sample VOC results reported by the laboratory. Additionally, per the notes to Tables B1 and B2 of 18 AAC 75.341, all concentrations in soil must be calculated and reported on a per dry weight basis.

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:

Vt (µL of solvent-water) = $$\left[mL\ solvent + \left(\frac{\%\ moisture * g\ sample}{100} \right) \right] * 1000\ \mu L / mL$$

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 volatile organic compound (VOC) and you are using a water miscible solvent (e.g. methanol), then you must make this correction. This includes the following analytical methods.

AK101
AK101/8021B,
EPA 8021B,
EPA 8260B,

What Regulations Apply?

SW-846 and Alaska Petroleum Methods (AK101) are specified in 18 AAC 75.355 and 18 AAC 78.275, as well as the *UST Procedures Manual and Guidance for Cleanup of Petroleum Contaminated Sites.* If there are future editions and updates to Method 8000, then DEC approved laboratories may be required to use them as well.

Questions?

If you have questions, please contact Lance Morris by phone at (907)-375-8210 or by email at lance.morris@alaska.gov.