Memorandum

To: All Laboratories Performing AK 101 and Volatile Organic Compounds (VOCs) in soil

From: Lance W. Morris; Contaminated Sites Approval Officer

Date: 9/14/2012

Re: Alaska Volatile Organic Compound Soil Preservation Requirements

---

There seems to be quite a bit of confusion amongst Contaminated Sites (CS) Approved laboratories regarding the Volatile Organic Compounds (VOCs) methanol preservation. The State of Alaska has very specific requirements for the preservation of soil samples that are to be analyzed for VOCs, including benzene, toluene, ethylbenzene and total xylenes (BTEX). To clarify, the following is the Alaska Department of Conservation (ADEC) CS policy in regards to soil preservation and analysis:

Gasoline Range Organics (GRO) by Method AK101:

- Methanol field preservation (with field surrogate) is required. Low level collection and analysis is not acceptable.

Volatile Organic Compounds (VOCs) by EPA 8021B, 8260B/C:

- Methanol field preservation and analysis is required.

- If the methanol analysis cannot meet Alaska regulatory cleanup levels and/or project specific action levels, low level collection and analysis can be approved on a site specific basis for those Compounds of Concern (COCs) not meeting required levels with the methanol analysis. The ADEC would generally only expect this to occur with a select number of COCs, for example, vinyl chloride. In such cases, the expectation is that both analyses are performed; the methanol as the primary analysis for all COCs and the low level as the secondary line of evidence for those compounds not meeting required detection levels.

Contaminated Sites approves work plans where the correct methods and requirements are specified. It is the client's responsibility to communicate the sample requirements to the laboratory and for the laboratory to follow them.

Normally CS is the lead on projects, so CS requirements will be in effect. However, CS does have work plans where other federal agencies are the lead, so the requirements may be different. Additionally, there could be instances where CS approves of doing only the low level analysis. For example, if samples have already been analyzed at a site previously and re-sampling with low level is deemed necessary to meet cleanup levels for certain components for site closure determination.

Ultimately it is the responsibility of the client to communicate sample requirements to the laboratory. If the laboratory has a question, it should be asking the client for clarification and/or additional instructions. Communication between the client and the laboratory is the key.

Following is an excerpt from the AK 101 method which can be found on the Contaminated Sites website; http://dec.alaska.gov/eh/lab/cs/csapproval.htm, or within the Procedures Manual, which can also be found at the CS website in the "Quick Links" to the left of the home page. Though it is not specifically mentioned in the AK 101 excerpt below, the same protocol is recommended for all methanol preserved VOCs.

AK 101 (excerpt)

8.2 Soils and Sediments: Soil and sediment samples require special procedures to minimize the loss of volatile organic compounds during transit from the field to laboratory. **Please note that this sample preservation is different from SW-846 Method 8021B. The use of sodium bisulfate as a preservative is not acceptable.**

8.2.1 Soil or sediment samples must be collected into appropriately sized containers and submerged in surrogated methanol.

8.2.2 Solid samples must be collected with minimum disturbance into tared jars with a Teflon-lined septum fused to the lid. Jars should be 4-oz or larger, if appropriate. 25-mL aliquots of methanol (includes 1.2 mL of a surrogate solution at 50 µg/mL) should be carefully added to the undisturbed soil until the sample is submerged.

8.2.3 It is extremely important that the weight of the jar, the weight of the methanol/surrogate solution, and the weight of the sample collected be known. These must either be measured directly, or sufficient information documented so that these weights can be calculated.

8.2.4 The ratio of soil to methanol used to calculate the MDL and PQL offered in this method was 1:1 (w:w). However, absorbent, organic soils such as muskeg and tundra will require a higher methanol-to-sample ratio, while beach sand may tolerate a lower ratio.

8.2.5 Soil for volatiles analysis can be collected using any coring device that minimizes soil disturbance. Any scraping, stirring, or similar activity will result in a loss of volatiles during sampling. A sufficient number of samples should be collected to

provide for backup in case of breakage.

8.2.6 Although it is not necessary to refrigerate all methanol preserved samples at 4° ± 2° C after collection and until analysis is complete, collected samples must be kept below 25° C.

8.2.7 A second surrogate, added to the methanol and soil mixture after sample collection, may be used in addition to, but not in place of, the surrogate with which the field methanol preservative was prepared.

8.2.8 A reagent methanol trip blank must be prepared in the same manner as the sample vials, and must contain surrogated methanol. One trip blank must be included with each shipping container and must be stored and analyzed with the field samples. Trip blank analysis is not required if all samples in a shipping container are less than the project specific cleanup level.

8.2.9 Field blanks may be added to the sampling protocol and are prepared in the field by addition of surrogated methanol to the prepared container, as required by the Assessment Firm or the Project Manager.

8.2.10 A sample of the same soil to be analyzed for GRO should be collected into a moisture-proof container for per cent moisture determination. This sample should be processed as soon as possible upon arrival at the laboratory to assure that the resulting moisture determination is representative of the preserved sample as surveyed.

8.2.11 Trip blanks, field blanks, method blanks, etc. should be prepared from the same batch of solvent, reagents and vials as are used for sample preservation.

8.3 Twenty-eight days is the maximum holding time for soil and sediment samples collected under this section.

8.4 Because the jars are pre-weighed, it is extremely important that the sampler put evidence tape on the kit ONLY, or the bubble bags in which the sample bottles are shipped, and not on the individual bottles. Removal of evidence tape is extremely difficult and the additional weight biases final results. Also, the glue on the evidence tape can contribute to the volatiles concentration in the sample (per Rocky Mountain Analytical, direct communication).

8.5 Trip blanks, field blanks, and bottle blanks should be prepared as appropriate to meet the quality assurance goals of the project plan.

A signature page has been attached to this correspondence, and it is required that a laboratory representative sign and return this signature by September 28th, 2012.

Please feel free to contact the Approval Program at the contact information below if you have questions or require any additional information.

Respectively,

Lance W. Morris
Laboratory Certification Officer
Contaminated Sites and Safe Drinking Water Act Program
State of Alaska Department of Environmental Conservation
Environmental Health Laboratory
907-375-8210
lance.morris@alaska.gov