

Method 5035 Soil Sampling for VOCs

Guidance for soil preservation from the CT DEP

The state of Connecticut has implemented guidance for the collecting and preserving of soil samples for volatile organic analysis. This guidance document which is based on procedures listed in the draft EPA SW-846 method 5035A took effect on 3/1/06. A key part of this document is to collect an undisturbed sub sample during sampling and "preserve" the sample by one of the detailed options within five minutes.

High Level soil samples (>200ug/kg)

In accordance with both the currently approved EPA method 5035 and with the CT guidance document, Phoenix supplies pre-weighed VOA vials containing 10ml of methanol. It is recommended that the vial be re-weighed in the field prior to use to insure that loss of methanol has not changed the tare weight (it should agree within 0.1 g)*. Soil (approximately 10 g) is extruded into the preserved vial. A line is provided on the vial to help gauge the correct amount of soil (the meniscus of the methanol should reach the line when the correct amount of soil is added). The threads of the vial are carefully wiped to insure a secure fit. It is recommended that the vial then be weighed in the field to determine the amount of soil added to the vial*. Alternatively, the vial can be weighed in the laboratory. However, losses of methanol in transport may result in data biased high.

*Field weight determinations using a balance are the only procedures provided in the CT guidance document.

Phoenix also accepts Encore samples. Note that these samples must be preserved by the laboratory within 48 hrs.

Low Level soil samples (<200ug/kg)

In accordance with both the currently approved EPA method 5035 and with the CT guidance document, Phoenix supplies pre-weighed VOA vials containing a magnetic stir bar, 5ml DI water, or 1g of sodium bisulfate*. In the field, the sample (approximately 5g) is extruded into the preserved vial. A line is provided on the vial to help gauge the correct amount of soil (the meniscus of the water should reach the line when the correct amount of soil is added.) The threads of the vial are carefully wiped to insure a secure fit. It is recommended that the vial then be weighed in the field to determine the amount of soil added to the vial**.

Alternatively, the vial can be weighed in the laboratory.

**Field weight determinations using a balance are the only procedures provided in the CT guidance document.

CT is recommending the use of three different procedures.

- 1) 5 gram into an empty VOA vial with magnetic stir bar, (required to be frozen within 48hr)
- 2) 5 gram into a vial with magnetic stir bar and 5 ml of water, (required to be frozen within 48hr)
- 3) A 5 gram Encore sample (required to be frozen or "preserved" by one of the above methods within 48 hrs).

Phoenix prefers the use of the 5 mls water preserved vials, but will provide pre-weighed vials that contain a magnetic stir bar and 5ml of sodium bisulfate for any projects where the sampling plan has determined that the water preservative is not appropriate.

** It should be noted that sodium bisulfate preservation might lead to formation of acetone in samples containing high amount of humic material. Additionally, certain analytes, such as styrene, vinyl chloride, trichloroethene (TCE), may be decomposed by the bisulfate, leading to low-biased results. Also, carbonate rich soils may effervesce. The effervescing will result in significant losses of VOCs and in such cases the sodium bisulfate cannot be used. Environmental professionals should use caution in using this preservation technique. **The use of sodium bisulfate can be an acceptable option, so long as the limitations discussed in this guidance are considered on a site-specific basis.***

Phoenix also accepts 5 gram Encore samples for low level analysis.

Each of the low level options has a one-time use by the laboratory, therefore two vials or Encore samples should be taken for each sample, and extra vials should be taken for site specific matrix spike (MS) and matrix spike duplicate (MSD) quality control.

Trip blanks

Trip blanks should match the sample preservative (i.e. methanol for high level samples, water and sodium bisulfate for low- level samples).

Note:

If only VOCs are being analyzed, please also submit a 2 oz. soil jar, for % solids analysis.