

# TCEQ Presentation

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## Required Use of Method SW846-5035

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# Required Use of Method SW846-5035

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To meet the requirement, on and after January 1, 2016:

Collect soil and solid samples for VOC analysis following the procedures in Method SW846-5035, "*Closed-System Purge-and-Trap and Extraction for Volatile Organics in Soil and Waste Samples.*"

Note: TCEQ Remediation Division will reject VOC data reported for solid samples collected after December 31, 2015 using another method when the data are intended to demonstrate compliance with the rules in 30 Texas Administrative Code Chapters 334 subchapters D and F, 335 subchapter S, and 350.

# Rationale for the Requirement

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Prior to 1997, the SW846 methods manual had one method, i.e., Method SW846-5030, for preparing both aqueous and solid samples for VOC analysis using purge-and-trap. However, low level VOCs sampled from soils (solids) were demonstrated to be biased low.

In 1997, EPA revised the SW846 methods manual. That revision:

- Removed the soil/solid component for Method SW846-5030,
- Introduced the new Method SW846-5035 for solid samples, and
- Eliminated the bulk sampling procedures when VOC concentrations in solid samples are anticipated to be low or are unknown.

**Key Point:** The only method for preparing solid samples for VOC analysis using purge-and-trap is Method SW846-5035, and the method includes sample collection requirements.

# Technical Justification

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Studies have demonstrated 90% or more VOCs, in some cases as much as three orders of magnitude, may be lost when solid samples are collected in bulk. The suspected cause of the loss was:

- Digging up the sample and packing the material into a 4-oz. container disrupts the soil structure creating more exposed surface area for volatilization to occur and introduces additional oxygen into the matrix triggering microbial replication.
  - More exposed surface area increases the likelihood of VOCs volatilizing from the sample and
  - Triggered microbial growth increases the likelihood VOC loss via microbial degradation.
- Laboratory subsampling and handling procedures when process VOC samples collected in bulk increase the likelihood of VOC loss.

# TCEQ Remediation Division Guidance

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- Follow the procedures in SW846 Method 5035 for using an open-bore syringe-type tool to collect a core of the solid material (approx. 5 grams) and extruding the core into a pre-labelled 40-mL VOA vial containing a stir bar with the tare weight recorded on the label.
- Use no preservatives, except to place the sample on ice immediately upon collection, and keep the sample on ice until the sample is received by the laboratory.
- If sample cannot be analyzed within 48-hours of collection, the sample should be frozen to  $< -7^{\circ}\text{C}$  but not below  $-20$ .
- Collect the sample in triplicate using the VOA vials, and one bulk sample for percent moisture determination.

TCEQ Remediation Division guidance can be downloaded from:

<https://www.tceq.texas.gov/remediation/analysis.html>

# Special Considerations

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## Environmental matrix structure:

- Highly unconsolidated matrix – Use a balance to gauge the volume 5g would occupy in the vial. Then use a clean spatula to scoop approximately 5g of sample into a tared VOA vial.
- Highly consolidated matrix – Reduce the particle size to point capable of placing in 40-mL vial. Use balance to gauge volume 5g of particles would occupy in 40-mL vial. Then collect the sample by quickly reducing the particle size to fit in the 40-mL VOA vial, and use a clean spatula to transfer the sample to the vial.

# Special Considerations (cont'd)

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- Samples known or reasonably anticipated to contain high concentrations of VOCs may be collected in bulk or with methanol preservative.
- Core samples taken from boreholes need to be screened and/or sampled as soon as possible when volatiles are a concern.

Note: If chemical preservation is used in the field, review transportation limitations, placarding requirements, and handling requirements.

# Notes

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REM will not use Method 5035 data to reopen a case, but if a case is reopened based on other factors, Method 5035 data will be used for subsequent decisions.

The Texas Laboratory Accreditation Program is verifying the laboratory is flagging the data reported to clients when the samples for VOC analysis are received in bulk.



# Q & As:

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1. Do tared vials received from a lab need to be weighed in the field? *No.*
2. If the samples have not been analyzed or frozen within 48 hours from collection, will data be rejected or a qualifier used on the data? *The data will be qualified. If data indicate no action, data may be rejected because of the potential low bias in the results. If data indicate action, data will be accepted.*

## Q & As:

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3. Is 5035 applicable to TCLP VOCs? *Yes.*
4. What is the guidance for collecting volatile composite samples? *Each aliquot of the composite is collected as a low concentration VOC sample. Once received by the lab, the lab will methanol extract each aliquot and composite the extract. Note: Methanol extract introduces a 50X dilution factor to the sample, so the action level needs to be compared to the expected sample detection limit for a composite sample.*

## Q & As:

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5. Is 5035 applicable to TCEQ Method 1005 if GROs are reported? *If TCEQ Method 1005 data are being used to evaluate risk associated with TPH, Section 6 of TCEQ Method 1005 requires the used of 5035 procedures when GROs are known to comprise the TPH or when the composition of the TPH is not known. If the composition of the TPH is known and known not to contain GROs, then TCEQ Method 1005 allows for the collection of bulk samples.*

## Q & As:

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6. If the sample for TPH is collected under the PST rules, is Method 5035 required? *No. The PST program does not evaluate TPH for compliance. TPH samples collected under the PST rules are used only to determine if PAH analysis is required. The TPH samples collected under the PST rules can be collected using bulk procedures. (See introductory information in Method 1005.)*

## Q & As:

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7. If the sample physically is not amenable to 5035 collection technique, how does the Laboratory report the data to the consultant? *For VOC analysis using purge-and-trap, the sample must be amenable to 5035 collection technique. If the sample is collected in bulk, the lab must manipulate the sample to get it into a 40-mL VOA.*

## Q & As:

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8. Is the TCEQ going to set a standard for laboratory reporting or provide guidance so laboratories report in a consistent/similar manner? *Yes.*
  
9. Will data generated from samples collected prior to January 1, 2016 be rejected if bulk sampling procedures were used? *No. The January 1, 2016 date applies to the day the sample was collected.*