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Bucket Brigades Helpful Information

Columbia Analytical often works with non-profit organizations and community action groups that are sometimes referred to as "Bucket Brigades." We have summarized information and lab practices here that may be useful to such organizations when collecting and submitting air samples for analytical testing.

Sample Collection

Tedlar bags

Samples collected in Tedlar bags may be analyzed for carbon monoxide, carbon dioxide, methane, Volatile Organic Compounds (VOCs) and reduced sulfur compounds.

Metals, pesticides, and polynuclear aromatic hydrocarbons (PAHs) are not sampled using Tedlar bags.

Very reactive compounds such as sulfur dioxide and oxides of nitrogen should be monitored in the field using direct reading instruments.

In order to collect your sample in a Tedlar bag, you will need to either use a sampling pump to collect the sample, or be able to hook the bag up to some other source of pressure to fill the bag.

Canisters

Stainless steel (Summa) canisters are a good choice for a wide variety of compounds, and they are suitable for applications including ambient and indoor air. When sampling VOCs present at low levels, canisters are generally considered to be a better choice than Tedlar bags.

The premise upon which canister sampling is based, is quite simple - a vacuum is applied by the laboratory to a specially prepared canister, then the valve is closed, maintaining the vacuum. To collect the air sample, the valve is opened, and the vacuum dissipates as the whole air sample is drawn in and captured. Once the valve is closed, and the sample is contained. This is called a grab sample.

Analytical Methods

Bucket Brigades and other similar groups often submit samples to our laboratory for one of the following analyses:

VOCs

VOCs are analyzed following EPA Method TO-15. Samples may be analyzed for a defined list of "target" compounds.

The laboratory has a standard compound list for TO-15 consisting of 75 compounds. The compounds on these lists are mainly industrial chemicals and include many of the Hazardous Air Pollutants (HAPs) that may be analyzed by this method. These lists are NOT all encompassing and may vary among laboratories.

In some cases, a better choice may be to analyze the samples for Tentatively Identified Compounds (TICs), which involves identifying up to 15 of the compounds present in the sample. This option allows you to identify what is actually present in your sample, rather than "look for" compounds from a pre-determined list that may or may not be there. It is useful in situations where the target analytes are unknown (e.g., odor investigations, etc.).

Total volatile organic compounds (TVOCs)

Another option is to analyze samples for total volatile organic compounds (TVOCs) as toluene, which provides an estimate of the overall VOC concentration, but does not identify specific compounds. The method referenced for this analysis is also EPA TO-15.

VOCs and TVOCs may be sampled in Tedlar bags or canisters.

Sulfur compounds

Sulfur compounds, such as hydrogen sulfide (which has a rotten egg smell), are analyzed by ASTM Method D5504-08. Samples may be analyzed for the laboratory's target list of 20 compounds or for a subset of that list.

Since many of these compounds are very reactive, the samples must be collected in a Tedlar bag.

The standard Summa-type stainless steel canisters should not be used to collect sulfur compounds.

Analytical reports

After the lab performs the analysis, you will receive an analytical report either via email. Your report will include the list of chemicals that the lab looked for in your sample, and it will indicate which chemicals were present and the airborne levels (concentrations) at which they were present.

The laboratory does not interpret the data in the analytical report, nor does it provide any information on recommended exposure limits or legal limits.

Holding Times

The holding time is the maximum amount of time between when the sample is collected and when it should be analyzed.

- Volatile organic compounds have a holding time of 72 hours when collected in Tedlar bags, and 30 days when collected in a canister.
- Sulfur compounds have a holding time of 24 hours.
- Tedlar bag samples should be sent by overnight delivery service (e.g., FedEx, UPS, etc.) to allow for expedited delivery and tracking.
- Bags should only be filled about ½ to ⅔ full (like a squishy pillow). Overfilled bags may expand and break when shipped by air.

Laboratory Hours

The laboratory is open Monday through Friday, 8 AM to 5 PM Pacific Standard Time. The lab is not routinely open on the weekends. Do not send samples for weekend delivery.

Chain of Custody Form

This form is used to identify to whom the data should be sent, the sample IDs, date and times of collection as well as the analyses requested (e.g., ASTM D5504, EPA TO-15). Please contact the lab for these forms, or download a form from our website.

Sampling Media

The laboratory can provide the following items:

Tedlar bags

- 1 liter capacity
- 3 liter capacity
- 5 liter capacity
- 10 liter capacity

Tedlar bags are single use. We do not rent sampling pumps.

Summa canisters

The canisters are cleaned and certified by the laboratory. They are sent to you fully evacuated and ready to collect a sample.

Payment Terms

A credit card or payment in advance is required. If you have any questions, please contact the lab at 805.526.7161.