DAT Facts™

Active Soil Gas Analysis

Active soil gas analysis represents a quantitative technique, which provides a good comparison between sampling sites and provides soil emission and flux measurements. The following represents a description of a number of sampling formats and the various applicable analyses.

Tube media

Sorbent tubes such as those containing Anasorb, Tenax or silica gel are available from a number of suppliers. The multiple bed absorbents are the most versatile and will collect a wide range of organic VOCs. A known volume of sample is drawn through the tube and analyzed by direct desorption. Supelco (800-359-3041) Carbotrap 317 # 20877 is a glass tube format.

Canister or bag media

Both formats can be used for active soil gas collection. The canister format may be a 6-liter Summa canister or a 0.5-liter Summa mini-canister. The soil gas probe is first evacuated using a gas tight syringe connected to a quick connect fitting. The canister, which has been evacuated to less than 50 milli-torr, is connected directly to the soil gas probe. Bag sampling is more difficult since a negative pressure container is used for filling the bag. Bags are available from SKC (80-752-8472) and canisters are available from DAT (800-733-8644).

Headspace techniques

The use of headspace analysis has provided a means of determining the in-situ soil gas.
The techniques used are RSK-175 developed by the Air Force and Method SW-3810. This technique has many applications for light C1-C6 hydrocarbons.

Analysis of active devices

Since active devices are usually targeted for the ppb to low ppm range of analytes, direct analysis or concentration followed by direct analysis is performed. Concentration of the sample using a TO-14/15/17 approach will provide suitable sensitivity for site assessment. In addition to general VOCs light gasses such as light hydrocarbons and permanent gasses can also be measured.

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