Nowell, Keith, Env. Health

From: Nowell, Keith, Env. Health
Sent: Friday, November 13, 2015 9:44 AM
To: jprall@portoakland.com
Cc: Roe, Dilan, Env. Health
Subject: RO#101, Inquiry About Test Method D2974

John,

The standard test method for total extractable range petroleum hydrocarbon (TEPH- which includes diesel and motor oil range petroleum hydrocarbons) analysis is EPA Test Method 8015. The 8015 analysis reports both polar and non-polar compounds. Non-polar compounds include diesel and motor oil. Sources of polar compounds include naturally occurring organics, e.g. plant matter, and TEPH degradation by-products (referred to as metabolites). Silica gel cleanup (SGC- EPA Method 3630C) removes the polar compounds, hence the 8015 analysis with SGC may provide a more accurate determination of the actual concentration of TEPH.

The San Francisco Bay Region, Regional Water Quality Control Board (SFBR-RWQCB) guidance is to perform the 8015 analysis with and without SGC. SFBR-RWQCB rationale for performing the analysis with and without SGC is that it provides a line of evidence when evaluating the occurrence of bioattenuation. The toxicity of most polar metabolite compounds has not been established and many regulatory agencies request the 8015 analysis be evaluated against the non-SGC TEPH concentrations. This is agency specific, and ACEH follows the SFBR-RWQCB for consistency in our evaluation of a site. The Environmental Screening Levels (ESLs) prepared by the SFBR-RWQCB (Interim Final 2013) states the inclusion of polars provides some protection from their likely adverse effects by assuming that the toxicity of the metabolites present in a TPH sample is, on average, similar to that of the parent hydrocarbons.

As stated previously, sources of polar compounds include naturally occurring organics. Locales in Alameda County, such as bay margin environments, may contain significant quantities of naturally occurring organics and/or organic material present in fill. One method of evaluating the amount of organic material in a soil sample is by performing ASTM Test Method D2974, entitled Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils. Unless soil is heavily contaminated, quantities of organic matter found in soil typically vastly exceeds the concentrations of TEPH and polar metabolites. Better yet are soil samples from uncontaminated areas of the site (up gradient, or other). Thus the D2974 analysis may provide a line of evidence regarding the disposition of naturally occurring organics and polar metabolites.

By evaluating and comparing the results of ASTM D2974 and EPA 8015 with and without SGC, a determination might be made regarding the presence of TEPH and the state of degradation at the site.

Regards,
Keith Nowell

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PDF copies of case files can be reviewed/downloaded at:

http://www.acgov.org/aceh/lop/ust.htm

On Nov 10, 2015, at 12:29 PM, John Prall <jprall@portoakland.com<mailto:jprall@portoakland.com>> wrote:

Keith & Dilan-

The County comment letter of October 2, 2015 for Fuel Leak Case #RO0000101, Port of Oakland/Kaiser & Powerine Oil/Berth 30, 2800-2801 7th Street, Oakland, Ca requested test method D2974 to be used in conjunction with and without silica gel cleanup for TPH-diesel testing, see Comment #8, top of page 4. Test method D2974 is apparently used to determine carbon content of organic soils for classification purposes. Reading about the method also indicates the test requires heating to 440 degrees Centigrade overnight (which drives off the volatiles), if this description of the test method is correct what kind of correlation is expected when the results of D2974 method are compared to the with and without silica gel cleanup test results? How are the results interpreted? Where can one read how the two test methods have been used in conjunction at other UST sites?

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