



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We Protect Hoosiers and Our Environment.

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Announcement of Changes to Total Petroleum Hydrocarbon (TPH) Procedures for Ground Water

Please discard the June 14, 2010 version of this announcement. The information in the table on the second page of that announcement in particular has been changed and the table itself is replaced with revisions to an existing table in the TPH Chapter of the RISC Technical Guide as discussed below.

This announcement applies to sites with releases of refined petroleum products such as those listed as typical product examples in Table 8-3 of the RISC Technical Guide TPH chapter. Table 8-3 is not considered a comprehensive list and this announcement may be relevant to sites with releases of similar refined products. This announcement may also have utility at Manufactured Gas Plants, refineries, crude oil and other sites where petroleum hydrocarbons may be a component of a larger suite of contaminants of concern (COCs).

After further evaluation and consultation with the RISC TPH workgroup, IDEM has concluded that, effective June 14, 2010, routine TPH delineation in ground water is no longer warranted¹. Therefore, IDEM is discontinuing the default TPH closure level for ground water and TPH measurement in ground water will not normally be requested except to confirm the safety of municipal or private drinking water wells that are potentially affected by a petroleum release.

The IDEM project manager has the discretion to request sampling for TPH (and other related COCs) from drinking water wells that are in proximity to the delineated COC plume. Any private or municipal drinking water wells that are within the area contaminated by relevant ground water COCs should include a TPH measurement. These TPH measurements will no longer be determined through Method 8015 analysis, but rather through the Washington Department of Ecology (WDOE) fractionation methodology which is the same method currently in use for ground water TPH fractionation. The results of this fractionation may be assessed through the revised version of the TPH Fractionation Calculator (version 1.3) as found on the IDEM RISC website on the RISC Toolbox page. The calculator estimates the hazard index of the hydrocarbon mixture, and calculates a concentration that is protective of a hazard index of 1. The calculator is corrected to remove water solubility constraints, and reformatted to facilitate ease of use. An evaluation of TPH through fractionation in addition to the measurement of specific individual analytes will provide IDEM with assurance that the public can safely consume water from drinking water wells.

Affected sections of the RISC Technical Guide TPH Chapter and Appendices are being updated to reflect this change, including revisions to Table 8-3. Table 8-3 specifies whether the WDOE volatile petroleum hydrocarbon (VPH) or extractable petroleum hydrocarbon (EPH) analysis or both should be performed depending on the product type. See the RISC Technical Guide page 8-16 on the IDEM RISC website here: <http://www.in.gov/idem/4200.htm>.

The RISC TPH workgroup has also discussed an expansion of the petroleum COC list and some changes in how exposure pathways are evaluated for petroleum sites. These changes are not being implemented at this time. IDEM plans to continue to vet these proposals for possible inclusion in the pending RISC Technical Guide revision.

If you have questions regarding this announcement, please consult with your IDEM project manager or contact the Risk Services staff through the Contact RISC page on the IDEM RISC website.

¹ There are numerous difficulties with measuring TPH and determining appropriate default closure levels. IDEM has concluded that evaluation of the individual COCs that are believed to be indicator compounds ("risk drivers") will adequately assess the risk from ingestion of ground water. The decision to evaluate drinking water wells through a site-specific ground water fractionation provides IDEM with additional confirmation that the individual risk drivers sufficiently address the risk.

Table 8-3 ~~7.1~~ Recommended Sample Collection and Analytical Methods

Product	TPH		COC		
	Sample Collection and Preparation	Analytical Method	COCs	Sample Collection	Analytical Method
Gasoline Range ($C_5 - C_{12}$) Auto gasoline Aviation gas Racing gas Mineral spirits Stoddard solvents Naptha Jet fuel JP-4	5035A/ IN5035M (Soil) 5030B (Water)	SW-846- 8015D (Soil) WDOE ¹ Fractionation VPH (Water ²)	BTEX MTBE n-Hexane Naphthalene	5035A/IN5035M (Soil) 5030B (Water)	GC/PID 8021 or GC/MS 8260 or GC/MS 524.2
Diesel Range ($C_8 - C_{28}$ C_{36}) No 1 Diesel No 2 Diesel Kerosene Jet fuel (JP-5, -7, -8) Light oil Home heating oil	Traditional with Appropriate Extraction	SW-846- 8015D (Soil) WDOE ¹ Fractionation EPH ³ (Water ²)	cPAHs Naphthalene BTEX MTBE	5035A/IN5035M (Soil) 5030B (water) and Traditional with Appropriate Extraction	GC/PID 8021 or GC/MS 8260 or GC/MS 524.2 and GC/MS 8270 SIM or HPLC 8310 or GC/MS 525.2
High End Hydrocarbon Oils ($C_8 - C_{34}$ C_{36}) No 4 Fuel oil No 5 Fuel oil No 6 Fuel oil Bunker C Mineral oil	Traditional with Appropriate Extraction	SW-846- 8015D (Soil) WDOE ¹ Fractionation EPH ³ (Water ²)	PAHs and Naphthalene	Traditional with Appropriate Extraction	GC/MS 8270 SIM or HPLC 8310 or GC/MS 525.2
Waste Oil⁴	Traditional with Appropriate Extraction	SW-846- 8015D (Soil) WDOE ¹ Fractionation VPH & EPH ⁴ (Water ²)	VOCs PAHs PCBs ⁵ Metals ⁵	Traditional with Appropriate Extraction	GC/PID 8021 or GC/MS 8260 or GC/MS 524.2 8310 or 8270 SIM or 525.2 and Relevant SW 846 methods for metals 8082

¹ Washington State Department of Ecology, Analytical Methods for Petroleum Hydrocarbons, Publication No. ECY 97-602, June 1997

² For sampling of potentially impacted drinking water wells only. As of June 14, 2010 IDEM no longer requires routine investigation of TPH in ground water. See the June 17, 2010 *Announcement of Changes to TPH procedures for Ground Water* available on the IDEM RISC website.

³ VPH analysis may also be requested at diesel or high end hydrocarbon sites depending on site-specific factors.

⁴ Where the two methods overlap, use the higher of either the VPH or EPH for those fractions.

⁵ PCBs and Metals may need to be analyzed on a site-specific basis. ~~For more details on waste oil, see Waste Oil Analyses and Analytes, at http://www.in.gov/idem/land/just/waste_oil.html.~~ (This website discontinued and replaced by the information provided in this table.)