Department of Ecology EIM Environmental Information Management

EIM Help – Entering Petroleum Hydrocarbon Data

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How Do I Report Petroleum Hydrocarbon (TPH) Sample Results to EIM?

There are many analytical methods used to quantify soil, sediment, and groundwater petroleum concentrations. This document discusses the most common and has tips on reporting your results.

NWTPH-HCID, NWTPH-Gx, NWTPH-Dx, NWVPH, and NWEPH methods - In many cases your lab will use Washington's petroleum hydrocarbon analytical methods per Ecology Publication ECY 97-602, Analytical Methods for Petroleum Hydrocarbons, June 1997. Please see this publication to determine when each method is most appropriate.

- **HCID –** It's not required to submit Hydrocarbon Identification (HCID) data unless they are the only petroleum hydrocarbon data for your sampling location. HCID isn't quantitative. It's a qualitative lab test to identify the type of hydrocarbon present (gasoline, diesel, etc.). If you submit HCID data, they must have numerical values. **Most common method = NWTPH-HCID.**

- **Hydrocarbon Ranges and EIM Parameter Names –** when you can't identify specific product(s), use the following terms. See the crosswalk for translating old terms to new terms (Table 1).

    - **"Gasoline Range Organics" (GRO)**: Indicates the presence of unresolved compounds eluting from toluene to dodecane (~C7->C12). **Most common method = NWTPH-Gx.** Note – the EIM parameters "Gasoline," Naphtha," and "Mineral Spirits" are for a specific compounds with specific chromatograms – not a range of compounds.

    - **"Diesel Range Organics" (DRO)**: Indicates the presence of unresolved compounds eluting from dodecane through tetracosane (C12-C24). **Most common method = NWTPH-Dx**. Note – the EIM parameters "Diesel Fuel" (#1 Diesel), "#2 Diesel," "Fuel oil, no. 2," and "Kerosene" are for specific compounds with specific chromatograms – not a range of compounds.

    - **"Lube Oil" (synonyms "Residual Range Organics" or "RRO")**: Indicates the presence of unresolved compounds eluting beyond tetracosane (>C24). Includes motor oils, hydraulic fluids, and power steering fluid when they can't be positively identified. **Most common method = NWTPH-Dx.** Note – the EIM parameters "Electrical Insulating Oil" (Transformer Oil)," "Paraffin Oils" (Mineral Oil) and "Motor Oil" are for specific compounds with specific chromatograms – not a range of compounds.

    - **"Heavy Fuel Oil"**: Indicates the presence of unresolved compounds in both the diesel and lube oil+ ranges. Includes Bunker C. "Heavy fuel oil" should not be confused with mixtures of #2 diesel and motor oils. **Most common method = NWTPH-Dx**.

Table 1: Hydrocarbon Ranges – EIM Parameter Crosswalk

If you were using this	Use this now

Diesel Range Organics	Diesel Range Organics
TPH-GC/Diesel	
Gasoline Range Organics	Gasoline Range Organics
TPH-GC/Gasoline	
Lube Oil	Lube Oil or Residual Range Organics
Oil Range Organics	
TPH-GC/Lubeoil	
Motor Oil (unless it's for the specific product)	

- **NWVPH - Volatile Petroleum Hydrocarbon (VPH) method**: Use this method for gasoline (aromatic hydrocarbon ranges that correspond to a boiling point range of ~36-220°C), naphtha, mineral spirits and other similar light petroleum products. Your lab should report results for a series of equivalent carbon (EC) fractions (4 aliphatic and 3 aromatic). When you submit your data to EIM, use only the EC fractions provided in the method (Table 2). If your lab did not report in this format, please ask them to follow the method and report results accordingly.

Table 2: VPH Method EC Fractions/EIM Names

Aliphatics	Volatile Petroleum Hydrocarbons, C5-C6 Aliphatics Volatile Petroleum Hydrocarbons, >C6-C8 Aliphatics Volatile Petroleum Hydrocarbons, >C8-C10 Aliphatics Volatile Petroleum Hydrocarbons, >C10-C12 Aliphatics
Aromatics	Volatile Petroleum Hydrocarbons, >C8-C10 Aromatics Volatile Petroleum Hydrocarbons, >C10-C12 Aromatics Volatile Petroleum Hydrocarbons, >C12-C13 Aromatics

- **NWEPH - Extractable Petroleum Hydrocarbons (EPH):** Use this method for kerosene, jet fuels, diesel fuel and heavy oil (Aliphatic and aromatic hydrocarbon ranges correspond to a boiling point range between approximately 150-500°C) and heavy fuel oils. Your lab should report results for a series of equivalent carbon (EC) fractions (5 aliphatic and 5 aromatic). When you submit your data to EIM, use only the EC fractions provided in the method (Table 3). If your lab did not report in this format, please ask them to follow the method and report results accordingly.

Table 3: EPH Method EC Fractions/EIM Names

Aliphatics	Extractable Petroleum Hydrocarbons, C8-C10 Aliphatics Extractable Petroleum Hydrocarbons, >C10-C12 Aliphatics Extractable Petroleum Hydrocarbons, >C12-C16 Aliphatics Extractable Petroleum Hydrocarbons, >C16-C21 Aliphatics Extractable Petroleum Hydrocarbons, >C21-C34 Aliphatics
Aromatics	Extractable Petroleum Hydrocarbons, C8-C10 Aromatics Extractable Petroleum Hydrocarbons, >C10-C12 Aromatics Extractable Petroleum Hydrocarbons, >C12-C16 Aromatics Extractable Petroleum Hydrocarbons, >C16-C21 Aromatics Extractable Petroleum Hydrocarbons, >C21-C34 Aromatics

- **WTPH Methods -** Washington's older suite of petroleum hydrocarbon methods (WTPH) were discontinued in June 1997 and labs are no longer accredited for these methods.. They may have continued to use it for up to a year. Data using the WTPH methods **will not be accepted** unless it was generated **prior to 1999**.

- **Total Petroleum Hydrocarbons Parameter –** Results for parameter Total Petroleum Hydrocarbons (TPH) should be scrutinized. The data should be historical and only from analytical methods WTPH-D, WTPH-G, WTPH-HCID, or WTPH-418.1. Results for parameter TPH using newer methods NWTPH-Dx, NWTPH-Gx and NWTPH-HCID should be reviewed carefully. The NWTPH group of methods does not use TPH as a parameter. Currently there is only one accredited laboratory for this parameter and it is associated with SW8015C.

Revision History

Revision Date	Revision No.	Summary of Changes	Reviser(s)
9/26/08	1.0	Original Document	CN
8/1/13	1.1	Added Residual Range Organics and RRO as synonyms to Lube Oil	CN
9/7/17	1.2	Updated links to Comments help and to Result Template	CK
10/3/18	1.3	Updated HCID language and fixed link to Analytical Methods for Petroleum Hydrocarbons document. Document needs revision.	CN
06/18/19	1.4	Added clarification under HCID bullet	KC
07/28/23	1.5	Modifications to HCID and WTPH Methods bullets, added bullet for Total Petroleum Hydrocarbons Parameter	KC, BF