What Are Petroleum Hydrocarbons?

Petroleum Hydrocarbons are a large class of chemicals made up of carbon and hydrogen that are the primary compounds found in common fuels such as kerosene, gasoline, diesel, motor oil, and different jet fuels, including JP-5. Each type of fuel consists of a slightly different mixture of hundreds of types of petroleum hydrocarbons.

Petroleum Hydrocarbons are organized in categories based on their size and chemical properties. They are measured in different ranges such as TPH-g, TPH-d, and TPH-o. All petroleum products and fuels consist of hydrocarbons in these ranges but with different amounts in each range.

Total Petroleum Hydrocarbons – Gasoline Range (TPH-g) are relatively short hydrocarbons that easily evaporate and are flammable.

Total Petroleum Hydrocarbons – Diesel Range (TPH-d) are medium length hydrocarbons that don't evaporate as well as the smaller compounds, but do produce a lot of energy when burned. These compounds are sometimes referred to as "middle distillates."

Total Petroleum Hydrocarbons – Oil Range (TPH-o) are larger hydrocarbons that don't evaporate and don't burn very well. They are commonly used to make lubricants and greases.

BTEX stands for benzene, toluene, ethylbenzene, and xylene. These are four specific compounds found in the **TPH-g category.** BTEX chemicals are used in many products.

Jet Propellant-5 (JP-5) is one type of jet fuel used by the military. It consists of many different hydrocarbons mostly in the **mid-sized (TPH-d) range.** JP-5 may also contain very small amounts of the smaller hydrocarbons in the **TPH-g category.** JP-5 does not contain lead.

Testing

Measuring petroleum hydrocarbons in water is difficult and requires special training and laboratory equipment. The testing is complicated by other organic compounds found in the environment that can also produce a hydrocarbon signal in the TPH-g, TPH-d, and TPH-o ranges. Examination and interpretation of the results needs to be thorough and requires expertise.

More information:

Agency for Toxic Substances and Disease Registry (ATSDR)
https://wwwn.cdc.gov/TSP/ToxFAQs/ToxFAQsDetails.aspx?faqid=423&toxid=75

Interstate Technology Regulatory Council (ITRC)
https://tphrisk-1.itrcweb.org/wp-content/uploads/2018/11/tph_fact_sheet_a5_chromatograms__11_4_18.pdf

For more information, visit health.hawaii.gov/NavyWater