

What is TPH? How to treat it?

Total petroleum hydrocarbons (TPH) is a term used to describe a large family of several hundred chemical compounds that originally come from *crude oil*. Crude oil is used to make petroleum products, which can contaminate the environment. Because there are so many different chemicals in crude oil and in other petroleum products, it is not practical to measure each one separately. However, it is useful to measure the total amount of TPH at a site.

TPH is a mixture of chemicals, but they are all made mainly from hydrogen and carbon, called hydrocarbons. They can be straight-chain, branched chain, or cyclic molecules. TPH compounds that have an aliphatic structure (i.e. straight or branched chains of carbon molecules) will behave differently to aromatic compounds (ringed chains of carbons). Similarly TPH compounds that have less carbon molecules will also act differently.

Scientists divide TPH into groups of petroleum hydrocarbons that act alike in soil or water. These groups are called petroleum hydrocarbon fractions. Each fraction contains many individual chemicals. Some chemicals that may be found in TPH are hexane, jet fuels, mineral oils, benzene, toluene, xylene, naphthalene, and fluorene, as well as other petroleum products and gasoline components. However, it is likely that samples of TPH will contain only some, or a mixture, of these chemicals.

TPH may enter the environment through accidents, from industrial releases, or as by-products from commercial or private uses. TPH may be released directly into water through spills or leaks. Some TPH fractions will float on the water and form surface films. Other TPH fractions will sink to into bottom sediments. Bacteria and microorganisms in the water may break down some of the TPH fractions. However, some TPH fractions will move into the soil where they may stay for a long time.

UK Remediation Recommended Technologies

A range of remediation technologies may be applicable for the treatment of TPH dependant on the sites characteristics. UK Remediation can offer the following technologies:

Biological

- Ex-situ Bioremediation Aerobic and Anaerobic In-situ Bioremediation
- Windrow and landfarming
- Biosparging

Chemical

- In-situ Chemical Reduction In-situ chemical oxidation
- In-situ direct push chemical injection

- Chemical addition by hollow auger mixing
- Ozone addition
- Surfactant addition

Physical

- Soil vapour extraction and bioslurping
- Steam Enhanced Remediation
- Airsparging
- Soil Solidification and Stabilisation
- Excavation or dredging
- Ex-Situ Thermal Desorption
- Soil Segregation, Recycling and Recovery
- Soil Washing
- Permeable Reactive / Barrier Walls & Capping.
- Oxygenation and oxygen barrier wall installation

For more information, please call us on

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