PETROLEUM

Petroleum from crude oil and natural gas is refined into fuels like gasoline, diesel, and jet fuel, as well as a wide range of other industrial products such as lubricants, hydraulic oils, waxes, asphalt, and motor oil. Petrochemicals are also used to manufacture plastics, synthetic fabrics, fertilizers, pesticides, pharmaceuticals, and thousands of other products. Spills and leaks have been common, such that petroleum-impacted properties make up a large percentage of brownfield sites.

PETROLEUM RELEASES AND ASSOCIATED RISKS

Many petroleum releases result from leaking underground storage tanks (USTs) at gas stations and fuel oil storage facilities. Other sources of contamination include historical land disposal of waste oil, junkyards, pipeline leaks, and accidents involving automobiles, rail, aircraft and marine transportation.

Exposure to petroleum is associated with increased cancer risk, damage to neurological, respiratory, gastrointestinal and circulatory systems, and irritation to skin and eyes. Petroleum in the soil can contaminate groundwater, affecting drinking water resources, while some petroleum substances can migrate as vapors through the soil, entering overlying buildings and presenting a risk to indoor air quality.

SIMPLIFIED BREAKDOWN OF THE CLEANUP PROCESS

The cleanup of a petroleum release generally follows these steps:

- Conduct Environmental Site Assessments to gather data about the site's historical activities, identify and delineate contamination, and evaluate potential risks to humans and the environment
- Perform a Feasibility Study to evaluate remedial alternatives based on effectiveness, implementability, cost, and ability to meet regulatory requirements.
- Prepare a Remedial Action Plan (RAP) containing the cleanup design and specifications, and implement the RAP.
- Document the cleanup and perform any required long-term monitoring and maintenance

CLEANUP

The reporting, prevention, control, and cleanup of petroleum spills and leaks are overseen by state agencies that enforce both state and federal rules.

When petroleum contamination is in shallow soil, it may be cleaned up by simply excavating the impacted soil and hauling it away for treatment or disposal. However, depending on the type of petroleum released and its location in the subsurface, other methods can be used to remediate petroleum. *For example, petroleum floating on the surface of water may be soaked up using oil-absorbent materials. Gasoline compounds readily evaporate, so they may be drawn by a vacuum system from underground soils to the surface for treatment.*

Since many petroleum compounds can be broken down into harmless substances by naturally-occurring soil microorganisms, numerous technologies have been developed to enhance this biological breakdown of petroleum within the subsurface. Other cleanup methods include chemical neutralization and pumping & treating petroleum-contaminated groundwater.

FIND MORE INFORMATION

Petroleum EPA