

## GASOLINE SPILLS AND LEAKS

Gasoline has been released into soil and groundwater at a large fraction of the nation's 571,000 underground fuel tanks. Gasoline contains highly toxic petroleum hydrocarbon (PHC) compounds such as benzene, toluene, ethylbenzene and xylene, and at high concentrations gasoline fumes or methane (five to fifteen percent or more by volume) from those releases may actually combust.

Yet small petroleum releases, such as those typically found at gasoline stations which had leaking underground storage tanks, rarely generate sufficient indoor vapors to pose an unacceptable vapor intrusion risk. This is because petroleum products tend to degrade into non-hazardous substances as they come into contact with oxygen, which itself migrates downward from the soil surface, in a subsurface environment containing microbes.



Consequently, regulatory agencies tend to treat routine fuel spills differently than releases of chlorinated solvents or large fuel spills and leaks. In fact, U.S. EPA has issued a separate *Technical Guide for Petroleum Vapor Intrusion*. EPA concluded that vapor intrusion can be ruled out at leaking petroleum tank sites, unless subsurface contamination is within a site-specific lateral distance, and vertically either 6 feet for **dissolved** contamination or 15 feet for **light non-aqueous phase liquids** (LNAPL). Dissolved means that the petroleum hydrocarbons are spread out in solution within the groundwater. LNAPL refers to the petroleum product that

has not dissolved, but instead, because it is lighter than water, sits at the top of the underground water table.

There are exceptions, so much of EPA's process is dedicated to ruling out those exceptions. The Guide summarizes the conditions to be evaluated:

- Source volume and composition (including PHCs and non-PHC fuel additives)
- Soil properties (moisture content, permeability, high organic carbon content, especially peat)
- Large building size
- Extensive impermeable surface covering (*e.g.*, asphalt, concrete)
- Preferential transport pathways (including both natural and man-made)

The Petroleum Guide may be found, along with supporting technical documents, at <http://www.epa.gov/oust/cat/pvi/> . For additional background, see the Interstate Technology Regulatory Council's Guidance at <http://www.itrcweb.org/PetroleumVI-Guidance> .

Click on <http://www.cpeo.org/pubs/SGVIU.html> to return to the *Stakeholder's Guide Update* main page.