

DRINKING WATER THREATS FACTSHEET

The Handling and Storage of Dense Non-aqueous Phase Liquid (DNAPLs) and Organic Solvents

What is the Threat?

Dense non-aqueous phase liquids (DNAPLs) are a Significant Drinking Water Threat. They are of concern in groundwater since they are heavier than water and do not mix with water. DNAPLs can sink into the ground, settle at the bottom of an aquifer and contaminate it. DNAPLs can be present in subsurface aquifers for decades or centuries before being depleted.

DNAPLs are considered dangerous and toxic to human health even at low levels. The Clean Water Act establishes that any quantity of the specified chemicals is a significant threat in Wellhead Protection Areas (WHPA) A, B and C regardless of the vulnerability score.

DNAPLs are used in many industries and are also found in smaller quantities in common household products such as adhesives and cleaners. Some common DNAPLs are dry cleaning chemicals, cleaning and degreasing solvents, and varnishes. The most common DNAPLs are chlorinated solvents used to clean metal products and in paint removers or strippers, spot removers and rug-cleaning fluids. Organic solvents are commonly used in dry cleaning (e.g., tetrachloroethylene), as paint thinners (e.g., toluene, turpentine), as nail polish removers and glue solvents (e.g., acetone, methyl acetate, ethyl acetate), in spot removers (e.g., hexane, petrol ether), in detergents (e.g., citrus terpenes) and in perfumes (e.g., ethanol).

Where is this Activity a Threat?

The handling and storage of DNAPLs are or would be a Significant Drinking Water Threat in WHPA-A, B and C. It can be either a moderate or low drinking water threat in the other vulnerable areas for WHPA. Organic solvents are a significant threat in WHPA-A and B for quantities in excess of 25 litres if stored below or partially below grade,

and in excess of 250 L if stored above grade. DNAPLs and organic solvents are not considered to be a Significant Drinking Water Threat to Intake Protection Zones since the nature of the chemicals limits their ability to reach a surface water intake.

How is the Threat Managed?

For the storage and handling of DNAPLs in concentrations typical of household use, an education and outreach program directed at the owners and/or occupants of such properties will be developed (policy 2.45).

When, in the opinion of the Risk Management Official, substantial quantities and concentrations of DNAPLs not typical of household use are being handled or stored, the threat will be managed through a Risk Management Plan (RMP) (policy 2.44).

Future handling and storage of DNAPLs will be prohibited in WHPA-A and B with a vulnerability score of 10. Future handling and storage of DNAPLs will be managed through a RMP in other areas where it would be a Significant Drinking Water Threat (policies 2.46 and 2.47).

Where the existing handling and storage of organic solvents would be a Significant Drinking Water Threat, the threat will be managed through a RMP. Future handling and storage of organic solvents where it would be a Significant Drinking Water Threat is prohibited (policies 2.48 and 2.49).

Low and moderate threats will be addressed through education and outreach (policy 1.01).

For More Information

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