

# DRINKING WATER SOURCE PROTECTION

ACT FOR CLEAN WATER



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## Drinking Water Threats from Organic Solvents

The storage and handling of organic solvents are considered drinking water threats under Ontario's *Clean Water Act, 2006*.

A solvent is a substance capable of dissolving another substance to form a solution. Organic solvents contain carbon as their base (petroleum based) and they are used routinely in commercial industries.

Organic solvents are useful because they can dissolve oils, fats, resins, rubber, and plastics. For example, solvents can be used to dissolve dirt on machinery. They are found in paints, varnishes, lacquers, adhesives, glues, and degreasing/cleaning agents, and in the production of dyes, polymers, plastics, textiles, printing inks, agricultural products, and pharmaceuticals. Many organic solvents are recognized as carcinogens, reproductive hazards and neurotoxins.

### Which Organic Solvents are considered a threat to drinking water sources?

Four organic solvents were identified as drinking water threats in Ontario if released to our environment as a result of improper handling or storage:

- Carbon tetrachloride,
- Chloroform,
- Dichloromethane and
- Pentachlorophenol.

Carbon Tetrachloride production and use has been phased out in Canada and its storage has been banned. It is considered a hazardous waste and human carcinogen. Chloroform is a suspected carcinogen. It is a naturally occurring chemical but most of what is found in the environment is manufactured. Historically it was used as an anesthetic and more recently as a solvent to make coolants. Chloroform evaporates quickly from surface water but can leach into groundwater from spills or leaks and remain for years. Pentachlorophenol is a manufactured chemical that is persistent in the environment. It is toxic to humans and other species and considered a carcinogen. It has been widely used as a fungicide and insecticide for wood protection.

### Types of threats to our drinking water sources:

#### Waste Disposal Sites

**On-site Sewage Systems** (septic systems)

**Sewage Works** (sewage treatment plants, municipal sewers)

**Fuel Oil** (residential heating oil)

**Liquid Fuel**

**Nutrients** (manure, bio-solids, outdoor livestock areas)

**Commercial Fertilizer**

**Pesticides**

**Road Salt and Snow Storage**

**Chemicals** (DNAPLs (toxic chemicals) and Organic Solvents)

**Aquaculture**

**Aircraft De-icing Runoff**

## Where are the threats from Organic Solvents in Quinte?

The storage and handling of organic solvents is considered a significant threat in the identified vulnerable areas surrounding municipal wells (WHPAs A and B) in Deloro, Madoc, Peats Point, Point Anne and Tweed and also in the area surrounding the municipal surface water intakes (IPZ 1) in Picton, Ameliasburgh and Point Anne. Very few parcels of land have been identified with an existing significant threat from the storage and handling of organic solvents in the Quinte Region.

Maps showing the vulnerable areas (wellhead protection areas (WHPAs) and intake protection zones (IPZs) surrounding municipal water sources in the Quinte Region are available at [www.quintesourcewater.ca](http://www.quintesourcewater.ca). The Source Protection Plan which contains policies for organic solvents is available at the same website.

Risks from organic solvents vary depending on the volume or quantity stored and where they are stored. To be considered a significant threat the specific organic solvent must be stored or handled in a highly vulnerable area and in quantities (greater than 25 litres) as specified; and under storage circumstances as specified in the particular policy. See the tables in the actual policies in the Source Protection Plan.



*Where handling and storage of dangerous chemicals is permitted, safe storage methods are required to help manage the risk.*

## How are threats from Organic Solvents being addressed?

Three policies in the Source Protection Plan address both existing and future handling and storage of organic solvents that are or would be significant drinking water threats in the specific vulnerable areas. The Source Protection Plan available at [www.quintesourcewater.ca](http://www.quintesourcewater.ca) contains policies that call for the following:

### **Education and Outreach:**

A general education policy calls for a program to raise awareness of the importance of protecting drinking water from contamination from organic solvents. It will encourage and promote, through voluntary action, the proper storage and handling of organic solvents. Another general policy calls for municipalities to provide opportunities for residents to dispose of hazardous materials in an appropriate manner such as through Household Hazardous Waste collection programs.

### **Prohibition:**

The future storage and handling of organic solvents will be prohibited in the areas immediately surrounding municipal wells (WHPA A and B) and in the vulnerable area immediately surrounding some surface water intakes (IPZ1) as per details in the policy.

### **Risk Management Plans:**

Risk management plans will be required for existing commercial and industrial handling and storage of organic solvents in areas immediately surrounding municipal wells (WHPA A and B) and; in the vulnerable area immediately surrounding some surface water intakes (IPZ1) as per details in the policy. The risk management official will work with the property or business owner to develop a plan to ensure the safe handling and storage of organic solvents. A risk management official will be in touch with anyone requiring a risk management plan.

### **Restricted Land Use:**

This allows the municipality to identify areas where the handling and storage of organic solvents are either prohibited or require a risk management plan. This will assist the municipalities to create their own internal process to ensure compliance with the Source Protection Plan.