



## Update for Hmong Shopping Center Superfund Site, Brooklyn Center

This fact sheet provides an update on the environmental investigation and response actions at the former Pilgrim Dry Cleaner site in the Hmong Shopping Center in Brooklyn Center.

The Hmong Shopping Center Superfund Site is also known as the Hmong Shopping Center/Pilgrim Cleaners Superfund Site, the 57th and Logan Redevelopment Site, and Hmong American Shopping Center Site #2.

Investigation and cleanup activities at this site have dealt with soil contamination, vapor in soil, and groundwater contamination caused by a release of perchloroethylene (PCE, also known as “perc”). The cleanup activities have included soil vapor extraction and injection of sodium permanganate. These technologies are used to reduce the levels of PCE, trichloroethylene (TCE) and other associated chemicals in the soil and groundwater.

The concern was that vapors containing PCE and TCE were found to exceed acceptable levels in several homes near the site. The vapors were caused by off-gassing of PCE and TCE from contaminated groundwater. Minnesota Pollution Control Agency (MPCA) staff dealt with the vapor intrusion by installing subfloor depressurization systems, which are similar to radon mitigation systems.

Please refer to the **For more information** section at the end of this fact sheet for site contacts and links to additional site information. This and the previous fact sheets for this site can be found on the MPCA website at <http://www.pca.state.mn.us/gp0r831>.

### Site history

Historical site activities included retail, commercial businesses, dry cleaning and gasoline stations dating back to the 1950s and 1960s.

The city of Brooklyn Center acquired the site property in 2005, and began an investigation under the oversight of the MPCA Voluntary Investigation and Cleanup (VIC) Program. In the fall of 2005, elevated concentrations of PCE and TCE were found in groundwater and as vapors in the soil (soil gas) overlying the groundwater in an area extending from the site property east to James Avenue. (Chemicals in soil vapor phase can cause chemical vapor intrusion into buildings.)

In 2008, MPCA staff began efforts to clean up the PCE-contaminated soil at the site. A soil vapor extraction system was installed to remove PCE, TCE and other chemicals from the soil above the water table. The system operated from October 31, 2008, until January 13, 2011, by which time it had removed most of the PCE contamination from the soil above the water table at the site. The system was removed in June 2011.

The Hmong Shopping Center/Pilgrim Cleaners site became a state Superfund site in 2009. During a public meeting on April 16 of that year, MPCA staff proposed reducing groundwater contamination by injecting an oxidant, sodium permanganate. Sodium permanganate destroys PCE; when PCE and other associated chlorinated compounds interact with permanganate, they ultimately break down into harmless compounds.

In February 2009, the MPCA completed a vapor intrusion investigation that included sub-slab sampling and indoor air sampling of homes in the area of the PCE and TCE groundwater contaminant plume. The

results identified four properties with PCE or TCE concentrations that exceeded indoor air screening values. In response to these exceedances, MPCA staff hired certified contractors to install indoor air vapor mitigation systems.

In September 2010, area residents were notified that the permanganate injection would soon take place. In October, the MPCA injected permanganate at 45 locations on and around the Hmong Shopping Center Superfund Site. About 200 gallons of 40% sodium permanganate solution were injected at each location (9,000 gallons total).

The MPCA periodically tested groundwater samples from seven monitoring wells in the area to evaluate the effectiveness of the permanganate treatment. Although the levels of contamination in the groundwater did decrease, the concentrations of PCE and its breakdown products, TCE and cis-1,2-dichloroethylene (cDCE), still exceeded the cleanup target levels.

To find out why the levels of contamination were not decreasing as fast as anticipated, the MPCA, in June 2012, conducted an investigation of the groundwater. The MPCA found that PCE had attached to and diffused throughout the 36-foot-thick clay layer that lies within the sand aquifer. PCE is slowly being released back into the sand aquifer from the clay layer.

Since 2012, the MPCA has continued to monitor groundwater and soil gas. Nine permanent vapor sampling points were installed in 2013 in right-of-way areas. Results from testing done in May 2014 showed decreasing levels of PCE and TCE in the groundwater. The testing indicated that the levels of contaminants did not exceed the MPCA guidance for vapor intrusion. However, the MPCA is concerned that extremely wet weather at the time of sampling affected the sampling results. So, once the ground freezes in autumn 2014, soil vapors will be sampled again at the nine permanent sampling points and up to 20 more reusable sampling points that are being installed in the rights-of-way.

## **Which compounds of concern have been found in the area?**

The two primary compounds of concern, PCE and TCE, have been detected in the off-site groundwater and overlying soil gas. The Minnesota Department of Health establishes screening levels that are considered health protective. The screening levels are used to decide whether there is a potential risk for elevated vapor concentrations to build up in indoor air. The screening level for sub-slab sample results is 200 micrograms per cubic meter ( $200\mu\text{g}/\text{m}^3$ ) for PCE and  $30\mu\text{g}/\text{m}^3$  for TCE.

The indoor air screening value is a level in indoor air that is considered safe, over a lifetime of exposure. The indoor air screening level for PCE is  $2\mu\text{g}/\text{m}^3$  and for TCE it is  $2\mu\text{g}/\text{m}^3$ . These screening levels were developed in cooperation with the Minnesota Department of Health.

## **Potential risks**

So far, there is no evidence that suggests an imminent health risk to residents. The municipal drinking water supply comes from a much deeper, protected water source, and is not affected by the contaminated groundwater.

Based on a survey, the city has identified eight private household wells in the investigation area. However, some homeowners did not respond to the survey. Private water supply wells in the area should not be used for drinking water. Wells that are no longer in use should be properly sealed to prevent future problems.

VOCs in groundwater can move into the open air spaces between particles of soil and then enter the indoor air of homes through cracks or other openings in foundations. This process is known as "vapor intrusion."

Long-term exposure to VOC vapors in indoor air, at levels that exceed indoor air screening levels, can result in an increased risk of cancer or other health problems. Both PCE and TCE, which were identified in soil gas at the site, are considered carcinogens.

Figure 1 shows the location of the site, the approximate extent of groundwater contamination, and provides a graphic summary of the sub-slab sampling results. The presence of PCE and TCE in the groundwater and vapor in the sub-slab samples indicates that both are compounds of potential vapor intrusion concern.

### What happens next?

The primary site concern continues to be vapor intrusion. The MPCA will conduct more soil gas monitoring and sub-slab monitoring along with continued groundwater monitoring in 2014. With this additional information, the MPCA will evaluate the risk to residents and natural resources of the area and determine whether additional cleanup actions are needed.

### For more information

#### Minnesota Pollution Control Agency

Dave Scheer, Hydrogeologist: 651-757-2693, [david.scheer@state.mn.us](mailto:david.scheer@state.mn.us)

Nile Fellows, Project Leader: 651-757-2352, [nile.fellows@state.mn.us](mailto:nile.fellows@state.mn.us)

#### City of Brooklyn Center

Gary Eitel, Director of Business and Development, 763-569-3305, [geitel@ci.brooklyn-center.mn.us](mailto:geitel@ci.brooklyn-center.mn.us)

Information about this site and recent site reports by the city are available at the city of Brooklyn Center's website, [www.cityofbrooklyncenter.org](http://www.cityofbrooklyncenter.org) (follow the links for 57th and Logan Soil Vapor Study). Also, the city has established a repository of documents related to this site at the Minnesota Room of the Hennepin County Brookdale Area Library, 6125 Shingle Creek Parkway.

All documents submitted to the MPCA pertaining to this site are kept at the MPCA, 520 Lafayette Drive N., Saint Paul, MN 55155-4194.

For more information on vapor intrusion, go to the Minnesota Department of Health website at [www.health.state.mn.us/divs/eh/hazardous/topics/vaporintrusion.pdf](http://www.health.state.mn.us/divs/eh/hazardous/topics/vaporintrusion.pdf).

