



Minnesota  
Pollution  
Control  
Agency

# Chemical oxidation at Former Pilgrim Dry Cleaner Site (also known as 57<sup>th</sup> and Logan Redevelopment Site or Hmong American Shopping Center Site #2)

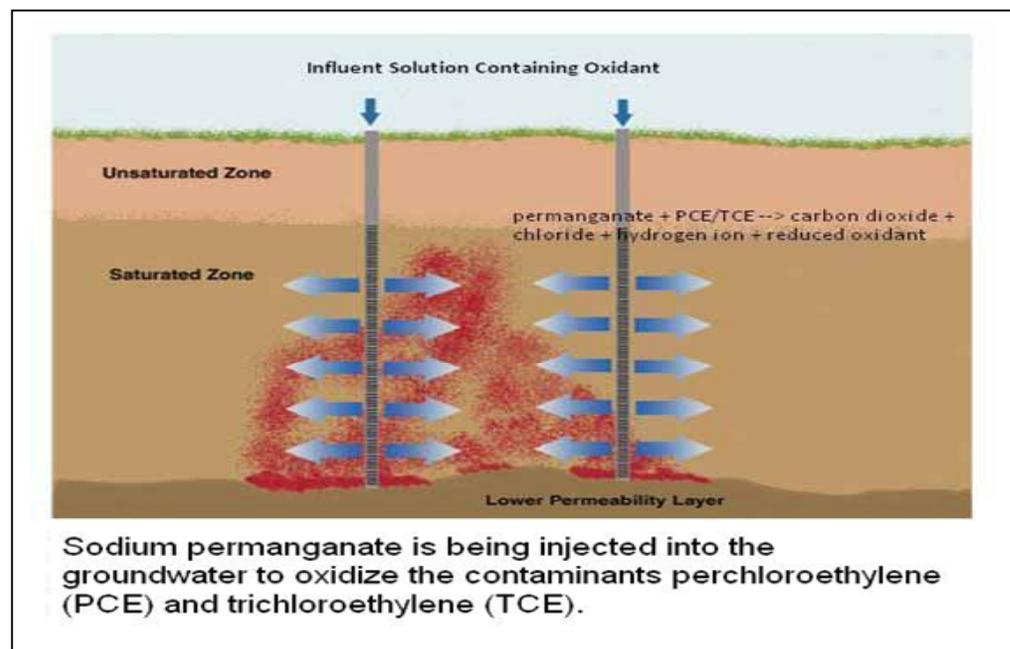
Geographic/Hennepin County • g-27-13e • September 2010

**C**hemical oxidation uses chemicals, such as sodium permanganate, to destroy pollution in soil and groundwater. These chemicals change harmful chemicals into harmless ones, such as water and carbon dioxide. Chemicals used for oxidation can destroy many types of chemicals, such as fuels, pesticides and solvents, including the dry cleaning solvents perchloroethylene (PCE) and trichloroethylene (TCE), which are the chemicals of concern for the Hmong American Shopping Center State Superfund Site (Site) at 57th and Logan in Brooklyn Center.

used for the cleanup — in this case, sodium permanganate is pumped below the ground surface through multiple injection points. As the sodium permanganate solution mixes with the groundwater and soil, it comes in contact with PCE and TCE, the PCE and TCE are reduced, or broken down, to carbon dioxide and water or other harmless chemicals. Mixing continues as the sodium permanganate solution is carried down gradient by the natural flow of groundwater and more polluted groundwater is cleaned up. The sodium permanganate is eventually consumed in the oxidation process.

## How does it work?

To clean up a site using chemical oxidation, the chemical, or oxidant, to be



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It can be difficult to pump an oxidation chemical solution to the right spots in the ground. So before the injection points are drilled, conditions underground must be studied by testing the soil and groundwater. Where is the pollution? How will the oxidation chemical spread through the soil and groundwater? Which oxidation chemical works best for his site? After answering these questions, the decision was made to use sodium permanganate as the oxidation chemical.

### **How long does chemical oxidation take?**

How long it takes chemical oxidation to clean up a site depends on the size and depth of the polluted area, the type of soil and conditions present, and how the groundwater flows through the soil. In general, chemical oxidation offers rapid cleanup times compared to other methods. Cleanup times can be measured in months, rather than years.

### **Why use chemical oxidation?**

Chemical oxidation is being used at many sites. It destroys pollution underground without having to dig it up or pump it out for transport to a treatment system. This saves time and money. Often chemical oxidation is used to clean up pollution that other methods cannot reach, such as pollution deep within groundwater. Chemical oxidation can be used to clean up the source of pollution. Most other methods that are used to remove the source are very slow and more expensive.

### **Is it safe to use?**

Chemical oxidation can be quite safe to use, but there potential hazards to those handling the oxidant. Sodium permanganate in concentrated form can be corrosive, which means it can wear away certain materials and burn the skin. People who work with it must wear protective clothing, such as white Tyvek® “moon” suits while mixing and injecting the permanganate solution. Minnesota Pollution Control Agency (MPCA) staff makes sure that the system is properly designed. Workers also test the soil, groundwater and air after chemical oxidation to make sure the site is cleaned up.

Cleanup activities for this site are focused on the shallow groundwater at a depth of approximately 15

feet. Brooklyn Center’s municipal drinking water supply in the investigation/treatment area is not affected by the contaminated ground water or the chemical oxidation treatment.

However, shallow, privately owned wells could be at risk. If you have a residential well on your property and are located east of Logan Avenue, south of 59th Avenue, west of Humboldt Avenue, and north of 55th Avenue, please contact Tom Bublitz of the City of Brooklyn Center at 763-569-3433.

### **For more information**

For more information about the chemical oxidation process being used at the 57th and Logan Hmong American Shopping Center Site #2 in Brooklyn Center, contact MPCA hydrogeologist Dave Scheer (telephone 651-757-2693, e-mail [dave.scheer@state.mn.us](mailto:dave.scheer@state.mn.us)).