



# Proposed vapor intrusion investigation and mitigation plan for Minnetonka Lakeshore-Advance Machine Site

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This fact sheet provides information on proposed additional vapor investigation and response action plans for the Minnetonka Lakeshore – Advance Machine site in Spring Park (the Site). Nilfisk Advance has conducted environmental investigations and groundwater cleanup under the regulatory oversight of the Voluntary Investigation and Cleanup (VIC) Program of the Minnesota Pollution Control Agency (MPCA).

## Site history

Advance Machine, Inc. operated an industrial sheet metal fabricating facility at the present location of the West Arm Townhome (WATH) development from 1958 to the 1980s, when the company moved from Spring Park to a new facility and the old facility was demolished. The property was sold for redevelopment and construction of the WATH development began in 1994. Environmental investigations conducted by the developers identified groundwater contaminated with petroleum and volatile organic compounds (VOCs). Nilfisk acquired Advance Machine in 1989. Nilfisk Advance entered the VIC Program in 1997 to conduct environmental investigation and cleanup under MPCA oversight.

## Groundwater investigation and ongoing cleanup

Groundwater investigations at the Site have identified elevated levels of VOCs

that were used as solvents at the former Advance Machine facility. The primary compounds of concern in the groundwater are trichloroethylene (TCE) and tetrachloroethylene (PCE). Other compounds that are associated with releases from the former facility include cis-1,2-dichloroethylene, trans-1,2 dichloroethylene, 1,1-dichloroethylene and vinyl chloride. Spring Park and WATH residents are provided with municipal drinking water that is obtained from a deeper groundwater aquifer and therefore the shallow contaminated groundwater at the Site does not pose a risk to the WATH drinking water supply.

The MPCA and Nilfisk Advance presented investigation results and discussed groundwater cleanup alternatives at a community meeting hosted by the WATH Homeowner’s Association in 2002. The selected cleanup remedy for the groundwater contamination was installation of a pump-and-treat system. This involves pumping groundwater from one groundwater extraction well, located on the Hennepin County Regional Railroad Authority property, treating the groundwater using granulated activated carbon and then discharging clean, treated water to Lake Minnetonka in accordance with a National Pollutant Discharge Elimination System (NPDES) permit. The groundwater pump-and-treat system has been in operation since April 2004 except during the winter months.

The groundwater treatment system is designed to both prevent contaminated groundwater from entering Lake Minnetonka and to remove and treat the dissolved groundwater contaminants. Since the system began operating, over 1,000 pounds of TCE have been removed from the groundwater.

### Vapor intrusion risks and risk criteria

In recent years the MPCA has developed new guidance for investigating risks of vapor intrusion at sites with environmental releases. Vapor intrusion occurs when contaminant vapors originating from underlying contaminated soil or groundwater migrate upwards through soils and into buildings via small cracks, sumps or other openings. Building occupants who breathe volatile chemicals that have accumulated in indoor air may be subject to increased health risks if there is long-term exposure (e.g., over a lifetime) to indoor air that exceeds risk criteria.

MPCA screening criteria for evaluating volatile compounds in indoor air are referred to as Intrusion Screening Values (ISVs). ISVs are concentrations that, if exceeded, are considered to pose a long-term health risk for indoor air. Other screening criteria used are soil gas screening levels and sub-slab screening levels for evaluating sampling results from soil gas and from beneath building slabs, respectively. The source for contaminant vapors at the Site is likely the contaminated groundwater beneath the Site. The ISV for TCE is 3 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), and both the soil gas and the sub-slab screening value for TCE is  $30 \mu\text{g}/\text{m}^3$ .

Vapor intrusion investigations typically involve the following steps: (1) identification of vapor sources, (2) sampling for chemicals in soil gas between the surface and the top of the groundwater table and comparing the results to soil gas screening values, (3) sampling soil gas beneath the foundation slab of a building if soil gas screening results are exceeded, and (4) sampling of a building's indoor air if sub-slab sampling results exceed screening criteria. If vapor intrusion risks are indicated based on sub-slab, indoor air screening results or a combination of other evidence, the MPCA recommends building mitigation in addition to conducting cleanup of the vapor sources.

### Vapor investigation results

In fall 2006, with the development of new vapor intrusion guidance, the MPCA asked Nilfisk Advance to investigate risks at the Site associated with contaminated soil vapor. TCE was detected in four of the six homes sampled and a sample in one home exceeded the ISV of  $3 \mu\text{g}/\text{m}^3$ .

In September 2007, subsurface soil gas sampling was conducted outside of buildings at three locations and identified TCE at concentrations below the soil gas screening value of  $30 \mu\text{g}/\text{m}^3$ . Vapor investigation continued in May and September 2008 with soil gas sampling at eight more properties. These results found TCE above the TCE soil gas screening value at five of the eight properties. These results indicate that some properties may be at risk for vapor intrusion and that other properties, based on past results, require additional investigation in the form of either soil gas sampling, or follow-up sub-slab or indoor air sampling.

### Next steps

**Proposed soil vapor investigation:** Additional vapor investigation at the Site is necessary to more fully determine where vapor intrusion risks may exist and to determine where mitigation to eliminate vapor intrusion risks is needed. Nilfisk Advance submitted an investigation and response action plan (RAP) to the MPCA in August 2010 which outlines steps to complete the vapor investigation and identify properties where vapor mitigation will be offered. The investigation plan involves (1) obtaining access to individual properties to conduct sampling, (2) collecting additional soil vapor samples at properties that require further exterior vapor assessment, (3) collecting sub-slab samples at properties where nearby exterior soil vapor sampling has already indicated a potential risk, and (4) offering building vapor mitigation to homeowners if sub-slab sampling results identify exceedances of the sub-slab screening value of  $30 \mu\text{g}/\text{m}^3$  for TCE. The RAP also proposes confirmation indoor air sampling at the one residence that exceeded the ISV for TCE during the 2006 sampling. After additional sub-slab sampling is conducted, the results will be evaluated and provided to individual property owners and occupants by the MPCA along with recommendations.

**Vapor mitigation:** Vapor mitigation in the form of a radon-type sub-slab depressurization (SSD) system will be offered to homeowners for whom sampling data confirms a vapor intrusion risk at their properties. The SSD system would be installed by an experienced radon mitigation contractor and the work overseen by Liesch Associates, Nilfisk Advance's environmental consultant. A SSD system is designed to create a slight negative pressure beneath the building slab relative to the interior building pressure by use of an in-line fan. These systems are the same type of mitigation systems used to protect homes from radon and have proven to be very effective at eliminating long-term risks of vapor intrusion.

The SSD system is constructed by installing vertical PVC venting pipe through the concrete slab floor of a home and connecting a powered in-line fan on the exterior of the home. The piping would then be routed vertically on the exterior of the house to exhaust the collected vapors above the roof line. Each system installed will be tested to ensure that it is operating properly.

## Additional information

Details pertaining to the proposed vapor investigations and vapor mitigation system will be discussed at an October 13, 2010, public meeting at the Yacht Club, located at 4165 Shoreline Drive, Spring Park, Minnesota.

Contacts for the Site and links to more information about vapor intrusion are provided below.

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**For more information on vapor intrusion,** see [www.health.state.mn.us/divs/eh/hazardous/topics/vaporintrusion.pdf](http://www.health.state.mn.us/divs/eh/hazardous/topics/vaporintrusion.pdf).

