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ADOT&PF Peger Road Maintenance Station

View detailed information from database on this site.

Status: Active

Database Name: ADOT&PF Peger Road Facility

Location: Southeast corner of Davis and Peger roads, Fairbanks

Latitude: 64.825963

Longitude: -147.769907

DEC Contaminated Sites contact: James Fish, Project Manager, (907) 451-2117 (Fairbanks)

Contacts updated: March. 14, 2014

PDF Version

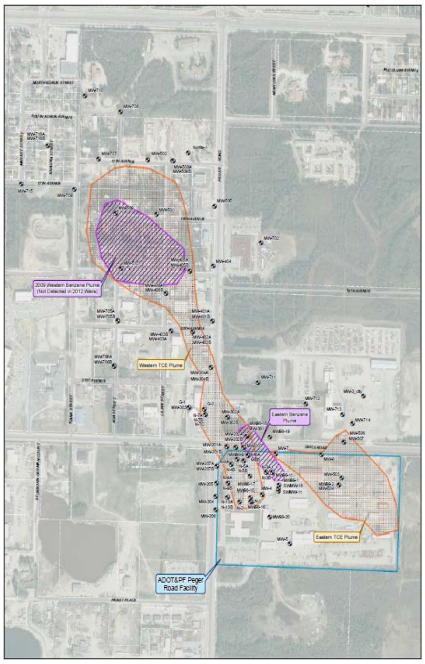
Summary updated: March 14, 2014

Click on photos or maps for larger versions.

Description

This site has soil and groundwater contaminated with chlorinated solvents and petroleum associated with the Alaska Department of Transportation and Public Facilities (ADOT&PF) complex on Peger Road in Fairbanks. The contamination was first discovered in 1991 when an underground diesel storage tank was being decommissioned.

The complex includes the mintenance and operations office, materials laboratory, technical services, the cat house (where Catepillar tractors are stored), a seasonal laboratory, state equipment fleet/maintenance shop, equipment wash-down areas, and areas where other equipment has been stored.



The map (above) shows the rough boundaries of the two TCE plumes and two benzene plumes. Three of the four plumes were drawn based on the results of 2012 well sampling. The fourth plume, the Western Benzene Plume, is based on the 2009 sampling results; in the 2012 sampling, the levels were below DEC's cleanup level of 5 parts per billion.

The areas inside all four plumes have samples from wells that came in above DEC's cleanup level; the areas outside the plume boundaries had levels that were less than 5 parts per billion. (Map from Shannon & Wilson, Inc.)

Public Health and Environmental Concerns

Groundwater and some soil contaminated with chlorinated solvents and petroleum are the main threat to public health and the environment. Contaminated soil is present on the Department of Transportation property. Contaminated groundwater travels off the Department of Transportation property and is the primary focus of the off-site investigation.

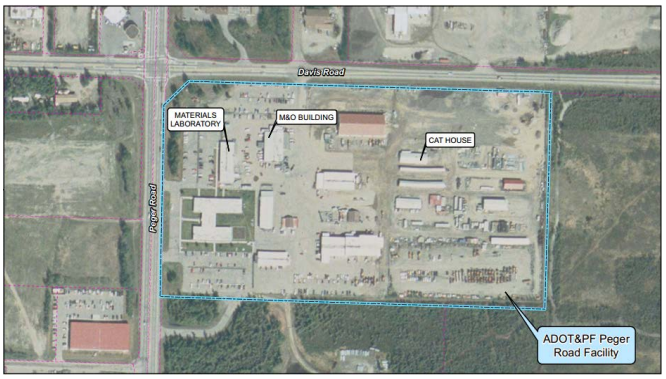
Four groundwater plumes have been observed at the site.

Two of the plumes contain chlorinated solvents. One of the chlorinated solvents is a compound called trichloroethene, also known as TCE – a common industrial degreasing and machine cleaning agent. Other chlorinated solvents, such a trichloroethane, or TCA, have also been detected.

TCE is "reasonably anticipated to be a human carcinogen," according to the federal Agency for Toxic Substances and Disease Registry (ATSDR), and the National Toxicology Program. It affects people's health, even by breathing small amounts or drinking small

amounts of water contaminated with TCE.

It's unknown whether TCA causes cancer, or how breathing or swallowing it affects human health. But it affects animals that breathe or swallow it, causing damage to the liver, kidneys, blood, stomach and nervous system, according to the ATSDR.



The above overhead view shows the Alaska Department of Transporation and Public Facilities complex, which is at the southeast corner of Peger and Davis roads in Fairbanks. (Map from Shannon & Wilson, Inc.)

The two other plumes, which are contaminated with petroleum, are benzene plumes. Benzene is a known carcinogen – it causes cancer in people and animals. It's widely used in the Unites States, and is associated with fuel, such as gasoline.

DEC's groundwater cleanup level – the level that contamination must be cleaned up to – for both TCE and benzene is 5 parts per billion, or 5 micrograms per liter (µg/L). The methods to establish groundwater cleanup levels statewide are in state regulation.

The public drinking water maximum contaminant levels (MCLs) for both TCE and benzene is also 5 parts per billion. MCLs are the maximum levels of certain contaminants that are permitted in public drinking water supplies; the U.S. Environmental Protection Agency sets the MCLs.

Here is a rundown of the plumes, which is based on 2012 sampling data with one exception:

1. The Western TCE Plume – This is the major plume at the site. It overlaps with the Western Benzene Plume and extends off the Department of Transportation property to the northwest into commercial and residential neighborhoods.

> What is vapor intrusion?
>
> Many chemicals off fumes – these chemicals are called "volatile." When released into the soil or groundwater, a certain amount of the chemical vaporizes into the small air spaces within the soil. The larger the chemical spill and the more volatile the chemical, the more chemical vapors move into the air spaces. This air is called soil gas. If the air pressure inside the building is lower than in the soil, or if the amount of chemicals in the soil gas is high, the vapors move, or intrude, into any open space, such as cracks in foundations, crawl spaces and basements. People in buildings can sometimes smell a chemical, but often the chemicals are odorless or too faint to smell.
>
> See DEC's Vapor Intrusion page

2. The Eastern TCE Plume – This plume appears to extend off the Department of Transporation property in both a northerly and easterly direction.

3. The Western Benzene Plume – This plume, as shown on the map of the plumes (right), is the only plume of the four based on 2009 sampling results. When the same wells were sampled in 2012, benzene was still in the wells, but the amount of benzene was below DEC's 5 parts per billion groundwater cleanup level.

4. The Eastern Benzene Plume – This plume also appears to be diminishing in size, similar to the Western Benzene Plume.

Current Status

The following are highlights from the 2012 site characterization and groundwater quality assessments. No sampling was done in 2013 due to budget constraints, but more sampling is planned for 2014.

1. The extent the Western TCE Plume, again, the major plume, has been identified, and it overlaps – or commingles – with the Western Benzene Plume. The Western TCE Plume extends from the Department of Transportation complex northerly to 17th Avenue and westerly toward Kiana Street. It appears to be stable and decreasing in concentration.

2. The Western Benzene Plume is north of 20th Avenue.

3. The Eastern Benzene Plume, which also commingles with the Western TCE Plume, spans across Davis Road.

4. Additional sources of TCE were discovered during the 2010-2012 period at the eastern property boundary of the Department of Transportation complex, and that contamination is labeled as the

Eastern TCE Plume. Groundwater contamination was also identified near the cat house, and may extend offsite in a northerly direction. Additional information on all the plumes will be collected during future investigations to refine the extent of those plumes.

Some residential groundwater wells (either drinking or irrigation wells) are affected by the Western TCE and Benzene Plumes, but those wells have contaminant concentrations that are relatively low and below the public drinking water MCLs of 5 parts per billion. DEC continues to monitor those wells.

5. Other contaminated sites in the area that aren't associated with the Department of Transportation complex are being investigated and may be contributing to the areawide groundwater contamination.

6. To keep contaminant vapors in groundwater and soil from entering the Department of Transportation's materials laboratory building in a process called vapor intrusion (see box), the Department of Transportation installed a sub-slab depressurization system, or SSD, below the building in 2004.

   A SSD system creates a vacuum-induced negative pressure beneath a building's foundation slab to prevent vapor intrusion – where vapors from TCE contamination in groundwater and soil beneath the building enter the building, making the indoor air unhealthy.

   Results of soil gas and indoor air samples collected in 2012 indicate the SSD system in the materials laboratory is effective at mitigating vapor intrusion.

What's Next

Additional assessment will be required to understand the full extent of the Eastern TCE Plume, as well as other potential sources for contamination near the eastern boundary of the Department of Transportation property. DEC will continue to monitor groundwater quality throughout the plumes, and will also evaluate the monitored natural attenuation approach as a groundwater cleanup strategy.

DEC will continue to monitor all residential wells in the area bound by Airport Way to the north, Wilbur Street to the east, Davis Road to the south, and Kiana and Roosevelt streets to the west. A new well survey will be conducted in the area during 2014.

DEC will also continue to coordinate investigative efforts with the various responsible parties of other contaminated sites in the area to determine if they are contributing to the areawide groundwater contamination.

More Information

Historical background on the site, as well as more information about the contaminants, can be found in the following fact sheets and links:

Fact Sheet for 2003 – (PDF 23K).

Fact Sheet for 2004 – (PDF 91K).

Fact Sheet for 2006 – (PDF 32MB).

Site summary on website as of June 2009 – (PDF 303K).

US Geological Survey website on natural attenuation of chlorinated solvents at this site.

Fact sheet on trichloroethene, or TCE (also spelled trichloroethylene) from the federal Agency for Toxic Substances and Disease Registry, July 2003: http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=172&tid=30.

Fact sheet on benzene from the federal Agency for Toxic Substances and Disease Registry, August 2007: http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=38&tid=14.

Alaska Department of Environmental Conservation fact sheet, "Additional Information about Exposure to TCE," (Jan. 8, 2014) – (PDF 94K).

DEC fact sheet, "Common Alaska Contaminants and their Sources," (June 2009) – (PDF 154K).

DEC fact sheet, "Introduction to Groundwater," (June 2009) – (PDF 359K).

DEC fact sheet, "Human Health Risk Assessment," (June 2009) – (PDF 118K).

DEC fact sheet, "Contaminant Concentrations," (June 2009) – (PDF 154K).

DEC fact sheet, "Environmental Cleanup Methods," (June 2009) – (PDF 277K).

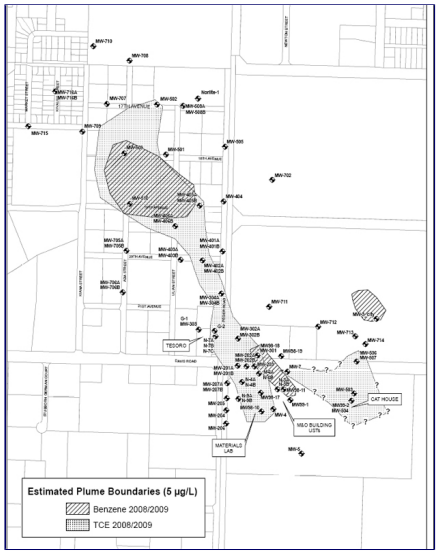
Agency for Toxic Substances and Disease Registry home page: http://www.atsdr.cdc.gov/.

National Toxicology Program home page: http://ntp.niehs.nih.gov/.

Contacts

For more information about this site, contact:

James Fish, Project Manager
Contaminated Sites Program
Spill Prevention and Response Program
Alaska Department of Environmental Conservation
(907) 451-2117 (Fairbanks)
James.Fish@alaska.gov



The estimated boundaries of the plumes are shown (above) as they were in June 2009. (Map from Shannon & Wilson)