

FACT SHEET

Vapor Intrusion in the Gaffney Road Area – An Update

September 2010

What is vapor intrusion?

Many chemicals give off fumes. Those fumes – the “volatile” parts of chemicals – enter the air and even the small air spaces within soil. Contaminants in soil and groundwater can cause vapor intrusion as the volatile compounds seep through cracks in concrete slab foundations, basements and possibly crawl spaces, and enter the air inside buildings.

What is the problem at Gaffney Road?

The Alaska Department of Environmental Conservation (DEC) has been sampling air inside several businesses in this part of downtown Fairbanks and has found that of the 12 businesses sampled, five have a low-level, but noteworthy, indoor air quality concern. DEC found tetrachloroethylene (also called PCE, or PERC) at levels in indoor air that may present a risk to workers if they are exposed for multiple years.

Since 2007, indoor air samples have been collected at least once at the following locations: the James S. Magoffin Jr. former law firm, Good News Bible & Book Store, Meyeres Real Estate, Sunshine Alterations, Forget-Me-Not Books, Stone Soup Community Center, Big State Auto Sales (formerly Park and Sell), Wells Fargo, Yukon Title, Northern Lights Church, a residence at 674 11th Ave. and State Farm Insurance.

The locations where samples have been over the DEC recommended target level for PCE in indoor air are the James S. Magoffin Jr. former law firm, Forget-Me-Not Books,

Sunshine Alterations, Stone Soup Community Center, and Good News Bible & Book Store.

Customers of these businesses are not at risk while visiting these buildings. The concern is with workers who are exposed over long periods of time, as in eight hours a day for roughly 25 years.

PCE is also in the groundwater at concentrations that pose a risk if the water is consumed for drinking water. DEC has been monitoring the groundwater for more than 10 years and the concentrations are stable or decreasing, but they still pose a risk.

DEC has installed a treatment system and notified the community to not use any private wells for drinking water. The area is currently served by a public water system.

What caused the problem?

Dry-cleaning operations over several decades in the Gaffney Road area are believed to have resulted in a large area of groundwater contamination with chlorinated hydrocarbons, primarily PCE and products produced during its breakdown – trichloroethene (TCE) and the dichloroethenes (DCE).

DEC has identified four main source areas during its investigation. Three of them are believed to be the result of releases from the sewer line – one source area is west of Cushman Street, adjacent to the Good News Bible & Book Store; a second is at Big State Auto Sales (formerly Park and Sell); and a third is south of Airport Way.

The fourth main source area is east of Cushman Street, in the area next to the current Coin King Laundromat.

Because the source areas seem to be separated by Cushman Street, we've divided the work into **Gaffney-West** and **Gaffney-East**.

Gaffney-West includes the Good News Bible & Book Store, James S. Magoffin Jr. former law firm, Big State Auto Sales building (formerly Park and Sell) and State Farm Insurance.

Gaffney-East includes the Stone Soup Community Center, Sunshine Alterations, Coin King Laundromat and Forget-Me-Not Books.

What are the potential health impacts of PCE exposure?

The health effects of breathing air or drinking water with low levels of PCE are not clearly known. PCE primarily targets the nervous system and kidney. The U.S. Department of Health and Human Services (DHHS) has found PCE to be a likely carcinogen (a substance that can cause cancer). More information on PCE is available at the Web site for DHHS' Agency for Toxic Substances and Disease Registry, at <http://www.atsdr.cdc.gov/tfacts18.html>.

Who's responsible for the contamination?

Legal responsibility has not yet been determined. Although the dry-cleaning operations are believed to be the source of the contamination, landowners are responsible for taking care of any indoor air problems in their buildings.

Gaffney-West: The primary source of the groundwater "plume" of contamination that

has spread west of Cushman Street is the sewer service line at the former Royal Masters Launderette, on Gaffney Road between Noble and Turner streets. (The building now houses the Good News Bible & Book Store and The Perfect Party.)

We believe there were two other release points along the sewer main that runs south along Stacia Street to south of Airport Way.

Gaffney-East: The source of the contamination in the area of the Coin King Laundromat is less clear, but the source is focused in the area immediately south of the Coin King Laundromat.

Is anything being done about the contamination?

Gaffney-West: DEC installed a remediation system to treat the primary source area. The treatment method, known as soil vapor extraction (SVE), is a simple vacuum system that consists of several wells installed throughout the source area that remove contaminant vapors from the soil. This system operates on the principle that chlorinated hydrocarbons are volatile; therefore, extracting vapors from the soil will reduce contaminant mass within the soil.

In addition, a sub-slab depressurization system has been installed to mitigate vapor intrusion to the Good News Bible & Book Store. This system has significantly reduced the concentrations of volatile contaminants migrating into the building.

Gaffney-East: DEC is continuing to monitor this situation, but to date the responsible parties have been unwilling to do any work toward cleanup. We are continuing to work with the responsible parties to identify viable options.

What can landowners do about vapor intrusion?

Cleaning the air inside a building affected by vapor intrusion can be done in ways similar to preventing naturally occurring radon gas contamination. Radon is an indoor air problem common in Fairbanks, and the University of Alaska Fairbanks' Cooperative Extension Service has a number of publications and recommendations on techniques and services. DEC recommends landowners concerned about indoor air contamination to contact a local radon specialist. The U.S. Environmental Protection Agency also has a publication called "Indoor Air Vapor Intrusion Mitigation Approaches" on its Web site at <http://www.clu-in.org/download/char/600r08115.pdf>.

Note

Vapor intrusion can be difficult to identify with certainty. The contaminant levels we're

looking for can be quite low, and other sources of contamination unrelated to soil and groundwater contamination – such as paint or solvent cans stored in the building – can also contribute to poor indoor air quality. The methods used in this investigation, however, give us more certainty that the indoor air problems are coming from contamination near or under the buildings.

Next steps

Gaffney-West: DEC plans to continue the operation of the treatment system. We will monitor the air and groundwater in the area to determine the effectiveness of the treatment.

Gaffney-East: We will continue to monitor groundwater in the area as well as work with the responsible parties to do the cleanup.

More information:

The University of Alaska Fairbanks' Cooperative Extension Service, "Radon in Homes – the Alaska Experience," <http://www.uaf.edu/ces/pubs/catalog/detail/index.xml?id=50>.

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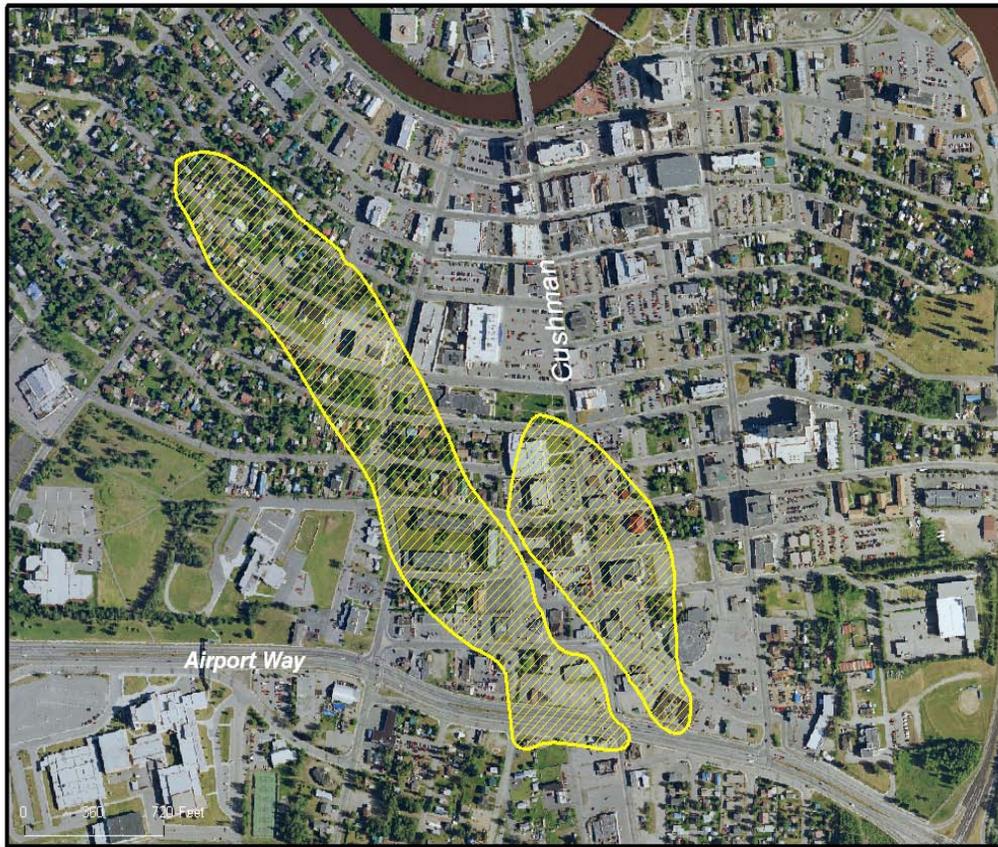
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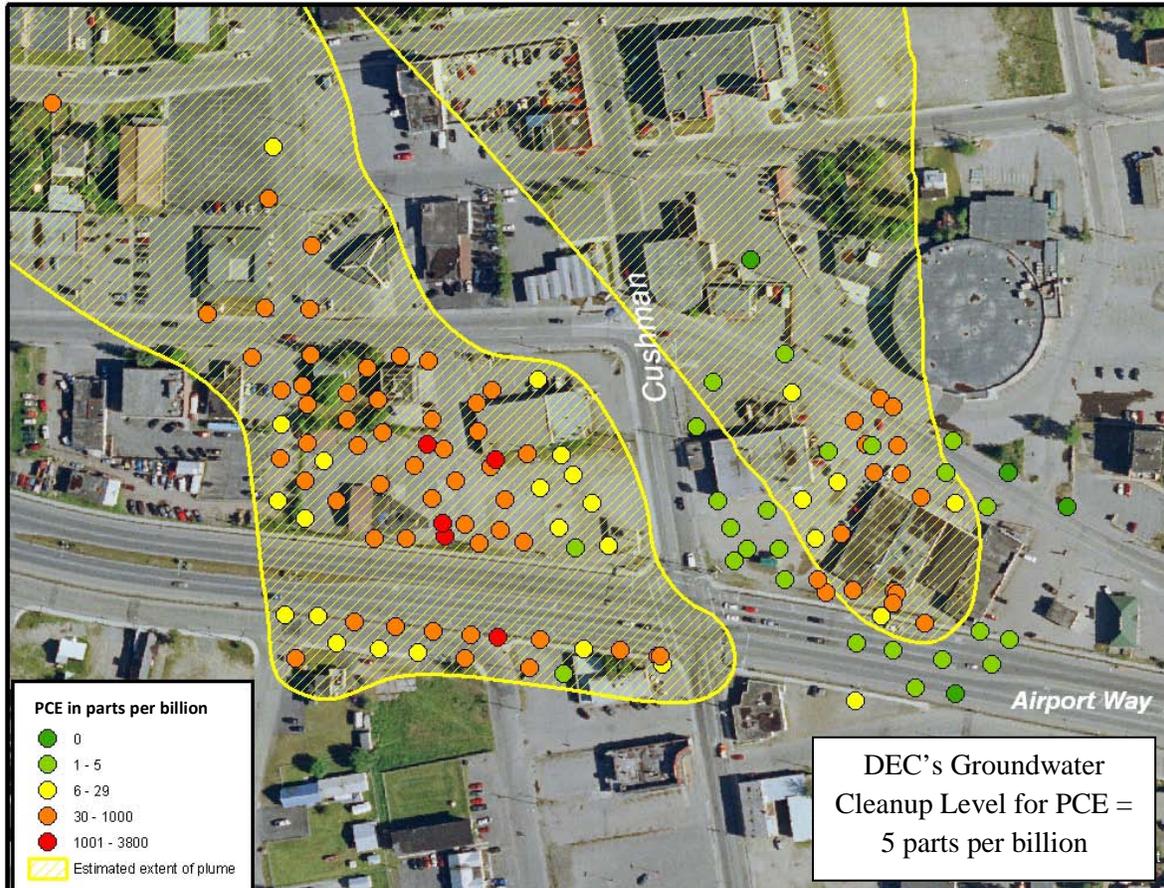
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This photo shows a rough estimate of the area where groundwater contamination has spread, likely from at least two former dry cleaners.

Groundwater test results for PCE in the Gaffney Road area, 2008-2009



Note: Groundwater contamination does not necessarily mean that contaminants are entering indoor air. The Alaska Department of Environmental Conservation has so far discovered indoor air problems slightly above its risk-based limits for the commercial use of buildings, and these are in the areas where groundwater concentrations are quite high. We are hopeful that the problem is limited to this small area, near the old dry cleaners, but we are continuing to expand our investigation to a wider area to make sure.