



Focus on

# Cadet Manufacturing Site

from Department of Ecology Toxics Cleanup Program

## An update for residents of Fruit Valley Neighborhood

This is an update about the cleanup of groundwater and solvent vapors in soil at Cadet Manufacturing (Cadet) and a status of how we're working to improve groundwater and indoor air quality in the Fruit Valley Neighborhood (FVN).

As you may recall, the Washington departments of Ecology (Ecology) and Health, along with Cadet Manufacturing of Vancouver, and its consultant, AMEC Earth and Environmental, Inc., are working together to assess environmental and public health effects from solvents (for example, trichloroethylene [TCE]) that entered groundwater from the Cadet Manufacturing site at 2500 W. Fourth Plain Boulevard in Vancouver.

Solvent-contaminated groundwater has been detected under the Cadet property and has migrated below the nearby FVN. Solvent vapors from the groundwater move into soil and in some cases up through the soil and into indoor air of residences in the FVN. Steps are now underway to remedy the groundwater and indoor air issues. This Focus sheet is a summary of the remedy activity since May 2003.

### Cleanup activities on the groundwater contamination source area

On May 6, Cadet's consultant began work at the Cadet property to install a treatment system to remove solvents from groundwater and vapors from soil beneath the Cadet building and on the Cadet property. The system began operating on October 23 and is designed to decrease the level of contamination in groundwater that is moving toward the FVN. Decreasing the contamination will reduce the potential for solvent vapors to get into indoor air in the FVN.

Indoor air sampling was conducted in the FVN on October 2 and 3 to evaluate conditions before the treatment system operation began and to reassess previous indoor air solvent detections. Indoor air was sampled in eleven residences; eight along Weigel Avenue and others located on W. 27<sup>th</sup> and 28<sup>th</sup> Streets and Unander Avenue. Five of these residences were previously sampled. During this sampling event, five outdoor air quality samples were collected to evaluate outdoor air conditions.

### How the treatment system works

The treatment system has 73 "air sparging" points and 41 "soil-vapor extraction" wells. The "air sparging" points are used to inject air into the groundwater. Here, bubbling action transfers dissolved solvent contamination from the groundwater into vapor. The "soil-vapor extraction" wells then vacuum the vapor from the soil, sending it to canisters containing activated charcoal where the solvent is absorbed and contained.

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Outside air and system samples are collected to verify that no solvent vapors make it through the carbon canisters into outdoor air.

Cadet's consultant is monitoring the system and soil vacuum levels twice a month to evaluate performance. Groundwater is being sampled every three months to evaluate solvent concentration changes in groundwater throughout the Cadet site and the FVN.

### **Cleanup activity on residence indoor air**

Past indoor air testing has shown that solvent vapors have moved from the groundwater up into the ground and into indoor air in some of the residences in the FVN. The state Department of Health determined from indoor air sampling results that *no immediate health hazard exists* at these residences. However, data indicates that six of the tested residences had solvent levels greater than what is normally expected in everyday living conditions. While it is unlikely that people living in these residences would become ill, the levels were determined to be high enough to warrant cleanup action.

Beginning June 10, Cadet's contractor, AMEC, began contacting the owners of six neighborhood residences that showed detections of solvents in indoor air that required remediation. AMEC visited each residence to conduct a full evaluation. AMEC prepared custom design plans, conducted a contractor walk-through, solicited contractor bids, and selected Anderson Environmental Contracting to install soil vapor vacuum systems in each of the six residences. Soil vapor vacuum system operation was initiated in the six residences between September 3 and 12.

To evaluate system performance, indoor air samples were collected from one residence approximately 48 hours, and then again nine days after system operation began. Results of that indoor air testing indicate that solvent vapor concentrations were reduced to allowable levels under state standards (they fell within published state Model Toxics Control Act indoor air cleanup levels). One outdoor air quality sample was collected to evaluate outdoor air conditions.

On October 2 and 3, the other five residences were sampled where soil vapor vacuum systems were installed. This was done to evaluate system performance within 30 days after system operation began. More outdoor air quality samples were collected to evaluate outdoor air conditions. The October sample results are not yet available.

Canisters containing activated carbon will be added to the residence soil vapor vacuum discharge stacks to absorb and contain solvent vapors.

### **Future indoor air sampling**

In January 2004, Cadet's consultant will collect indoor air samples in approximately 60 residences in the neighborhood. The sampling will involve a number of residences that were previously sampled, and others that will be sampled for the first time. Ecology is requesting that groundwater and soil gas samples also be collected during this sampling event. This information will be used to better correlate solvent detections in groundwater and soil gas with vapors detected in indoor air.

After the January sampling, indoor air sampling will continue every three months through 2004. Future sampling locations will be based on previous sampling results.

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## **Cleaning groundwater below the Fruit Valley Neighborhood**

On November 5, well construction was initiated in the neighborhood on a well that will be used to test the effectiveness of “recirculating” groundwater cleanup technology. This “pump and treat” system works by drawing groundwater into a screen at 60 to 65 feet below ground surface on the well bottom, and then pumping water up the well pipe to an injection screen at 22 to 32 feet below ground surface, which is at the depth of the water table. An oxidizing compound (sodium permanganate) will be injected into the well that begins to break down the dissolved solvent before it is injected back into the formation. The oxidizing compound eventually breaks down the solvent into carbon dioxide, water, and dissolved chloride anions (like sodium chloride or table salt). The groundwater recirculates and stays under the ground during its treatment.

The reaction is slow and steady and will not generate any gases or solvent related by-products. This test will determine if this technology is viable and if additional recirculation wells would be effective in FVN. Progress will be monitored through measurements from observation wells installed near the recirculating well.

### **Additional groundwater monitoring wells planned**

In the next few weeks, shallow and intermediate depth wells will be installed on Unander Avenue, south of 31<sup>st</sup> Street, and along W. 31<sup>st</sup> Street by the Xavier Avenue intersection. Information from these wells will allow a better understanding of the groundwater quality conditions in the neighborhood.

### **How you can help**

At Ecology’s request AMEC will be conducting a survey among residents of the FVN. The survey seeks information about building structure. This information will help experts evaluate the potential migration routes of solvent vapor into residences. The second part of the survey will include questions about domestic groundwater use in the area.

This survey will be mailed to owners and occupants of the FVN. It is important that we hear from everyone about their building and use of groundwater so we can evaluate potential migration routes of solvent vapor and points of contact with groundwater.

### **What you can do to reduce your chances of exposure**

There are a few things to be aware of regarding solvent vapors in and around your residence. Solvent vapors in soil move to the ground surface and can migrate into a crawlspace or a basement. Solvent vapor migration from soil can also enter an open soil excavation.

*Keep residence foundation vents open and clear from obstructions.* This allows natural ventilation in your crawlspace. Also, be aware that construction-depth soil excavations may increase your chances for solvent vapor exposure.

### **Contacts for more information**

For project-related questions, contact Craig Rankine at the Department of Ecology at 360-690-4795, or by e-mail [cran461@ecy.wa.gov](mailto:cran461@ecy.wa.gov) .

For health-related questions, contact Barbara Trejo at the Department of Health at 360-236-3373 or by e-mail at [barbara.trejo@doh.wa.gov](mailto:barbara.trejo@doh.wa.gov) .

This document and other previous site summary information can be obtained on Ecology's Web site at: <http://www.ecy.wa.gov/biblio/0309035.html>