EPA
United States
Environmental Protection
Agency

More Ground-Water Wells Installed

Third Quarter Sampling Complete

Vernay Laboratories Inc.
Yellow Springs, Ohio — October 2003

For more information

To learn more about Vernay's cleanup activities, you may review site documents at the **Yellow Springs Community Library** located at 415 Xenia Ave., in Yellow Springs, Ohio.

For additional information, please visit EPA's Web site at **www.epa.gov/region5/sites/vernay**. EPA will continue to post quarterly ground-water reports and a copy of the June 2003 mailer. You may also contact:

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If you know someone who would like to be added to EPA's mailing list, please contact Bri Bill.

If you've driven by the Vernay Laboratories Inc. facility lately, you may have seen crews working along Dayton Street. That's because Vernay is installing more wells into the ground water and soil fill surrounding the storm sewer (called sewer backfill, see page 3). Water tests from these wells will help U.S. Environmental Protection Agency and Vernay better understand where contamination is and whether the levels are increasing or decreasing. Vernay recently installed nine wells in the rights of way of Dayton Street, Omar Circle, Green Street, Suncrest Drive and on private property to the east of the Vernay facility. These wells were tested at the end of September as part of the routine quarterly ground-water sampling as required in the agreement between EPA and Vernay. Depending on the results of these samples, Vernay may install an additional well on Wright Street.

Placement for some wells was determined through the use of a geoprobe. A geoprobe is a mini drill-rig that can bore holes into the soil and ground water. Vernay collected samples and had them analyzed. Based on those results, Vernay in consultation with EPA decided where to place the new wells. See the map on page 3 for geoprobe sampling locations.

Ground-water sampling

Vernay began testing on their property in November 1998. As they learned more about the limits of the contamination, Vernay installed and monitored additional wells at different depths on the rights of way of Omar Circle and Wright Street, and later Dayton Street. Some wells went into the storm sewer backfill to test sewer water collecting between soil particles. Currently, some 45 wells are being maintained on and off the Vernay property for ground-water and sewer backfill monitoring.

Vernay collects and tests water samples from different locations on and around the property.

A September 2002 legal agreement between EPA and Vernay required quarterly testing to find out what chemicals are present and at what levels, and how far the contamination has spread from the facility. The testing, along with an investigation of the area's geology, will help Vernay and EPA identify the best long-term solution to cleaning up or containing the contamination.

Why does it take so long to study ground water?

To decide on an effective cleanup plan, scientists need a lot of information about the ground water and the contaminants. Flow direction, characteristics of the rock, depth of the water, natural chemical characteristics such as the amount of dissolved oxygen, and influence of nearby streams and pumping wells are all important.

What is ground water?

Ground water is the water that collects underground in the spaces between dirt and rocks.

What happens to the contaminants once they enter ground water also must be known:

- What contaminants are present?
- At what levels?
- Are they breaking down?
- What are they breaking down into?
- Are they moving at the same rate as the ground water, or faster or slower?
- Are levels increasing or decreasing?
- Where is the center of the plume (the area of contaminated ground water)?

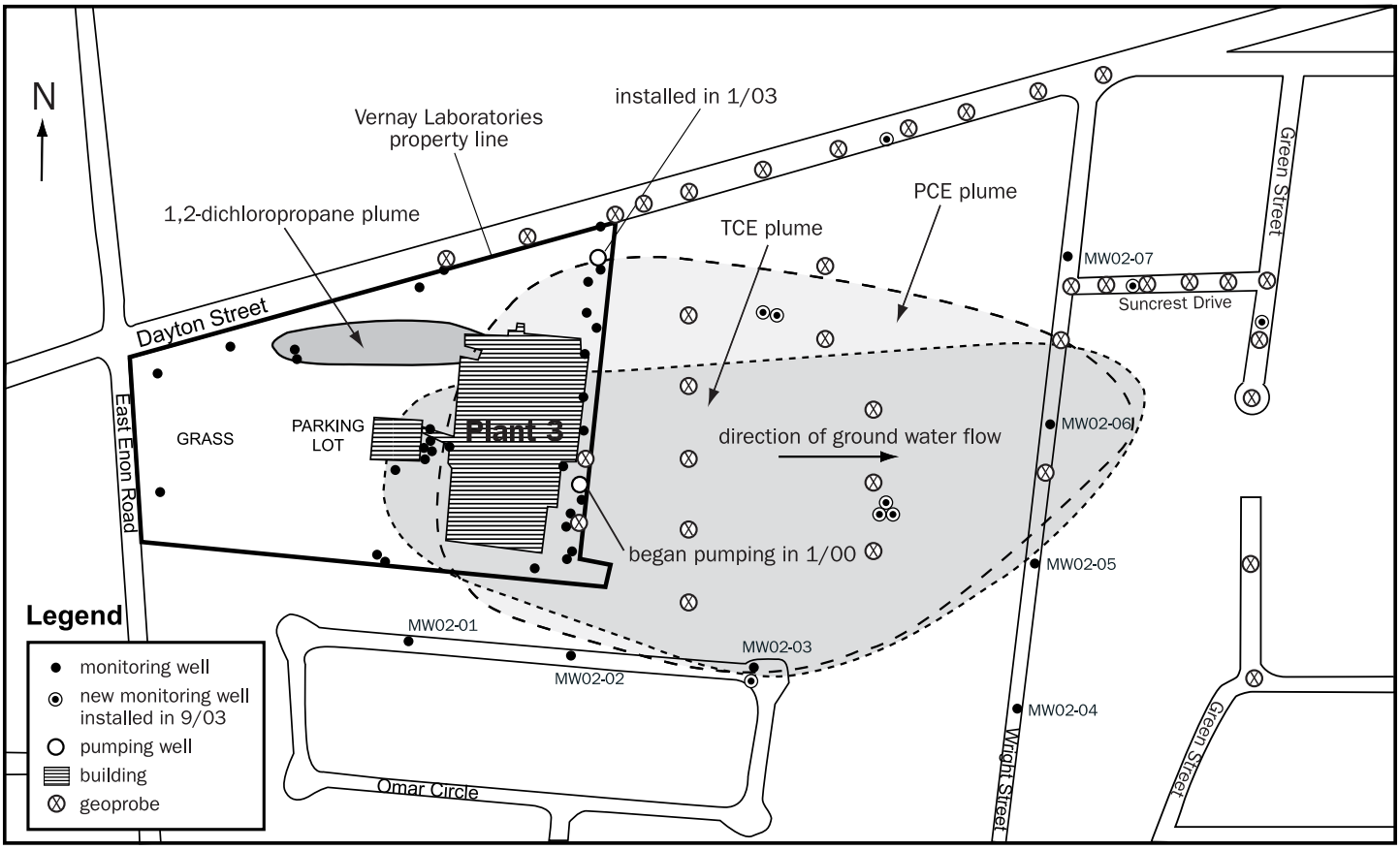
There are two more reasons why it takes years of sampling for scientists to see trends and understand what's happening. Ground water moves slowly and the rate of flow varies within the affected area. And rainfall, snow melt, and nearby streams and pumping wells can cause fluctuations in contaminant levels between samples.

What we know now about the ground-water contamination

Many of the wells installed by Vernay have been tested since November 1998. While it is still too early to draw conclusions with any certainty, here's what we know so far:

- Ground-water contamination has moved beyond the limits of the Vernay facility, mainly to the east. The map on page 3 shows the general area of contamination, but it's important to be aware that data exists only where monitoring wells have been installed. Information on the areas between wells is based on computer modeling and knowledge about the flow of ground water in the area.
- Main contaminants include the metal degreasers tetrachloroethylene (known as PCE) and trichloroethylene (known as TCE) and 1,2-dichloropropane, a pesticide in common use many years ago.
- Based on testing so far, contamination occurs primarily in the upper portion of the Cedarville aquifer – a water-bearing rock formation approximately 20 to 100 feet below the surface. Contamination has been found in the upper and middle portions of this aquifer at the Vernay property. The new wells being installed off the property will test the upper, middle and deeper portions of the Cedarville aquifer. Ground water in the deeper Brassfield aquifer, which lies below the Cedarville aquifer, has not been tested.
- Contamination has been found in the sewer backfill surrounding sanitary and storm water sewers in the northeast portion of the site and along Dayton Street where the sewer empties into a creek near King Street. The main contaminants include PCE and TCE.
- In some wells, low levels of other contaminants such as freon, acetone and solvents are present.
- Although some of the levels found would make the water unsafe for drinking, the Village of Yellow Springs pumps its drinking water from a location several miles south of the contaminated area. The village tests this water as required by state and federal law. Most residents living near Vernay get their drinking water from the Village of Yellow Springs. The survey described on the back page will help determine which homes use residential well water for drinking.

Location of ground-water wells and contamination



Note: Three areas of ground-water contamination — called plumes — are present, represented by the different shades. Data exists only where there are monitoring wells. Shading in areas between wells is based on computer modeling, knowledge of the local geology and contaminant chemistry. EPA and Vernay's interpretation of plume boundaries may change as more information is gathered about the ground water. (Map is not to scale.)

Omar Circle wells

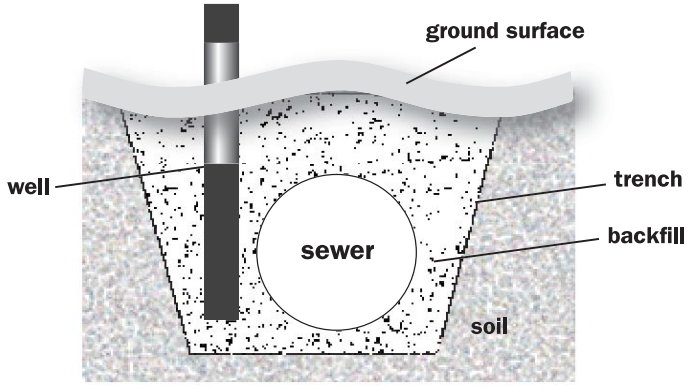
Three monitoring wells have been in place since 1999 on the north side of Omar Circle next to the Vernay property. Refer to the map for the locations of the monitoring wells.

- Well MW02-01: No contaminants have been found.
- Well MW02-02: Contaminant levels of TCE and PCE have dropped.
- Well MW02-03: Contaminant levels of TCE and PCE have fluctuated. Levels since June 2000 had been decreasing, until an increase in February 2003. The most recent sample taken in May shows levels decreasing again, except for freon. Additional samples and a mathematical analysis must be completed before conclusions can be drawn about contaminant levels in this area.

Wright Street wells

Vernay installed four monitoring wells in 1999. Refer to the map for well locations.

- MW02-06: PCE levels have increased but appear to be leveling off. TCE levels appear to be decreasing slightly. Additional samples and a mathematical analysis must be done before conclusions can be drawn about contaminant levels in this area.
- MW02-04, MW02-05 and MW02-07: No contaminants have been detected.



Vernay installed wells to sample water in sewer backfill areas. (Figure is not to scale.)

Timeline of Vernay's corrective action activities

Following are dates for key activities Vernay agreed to conduct as part of the legal agreement with EPA. Completed activities are noted with a ✓.

November 2002

Submit a current conditions report, which describes the property and any known contamination. ✓

Winter 2002 - 2003

Phase one of the RCRA* facility investigation to study site ground water, soil and sediment

Begin a quarterly ground-water monitoring program to collect and test samples of water from area monitoring wells. ✓

Review data collected about the ground water — called a capture zone analysis — and decide where to install another pumping well to slow movement of contaminated ground water. ✓

Begin researching the option of treating contaminated soil in place without having to dig it up and move it off site. ✓

February 2003

Install a second ground water pumping well on the property. ✓

April 2003

Submit first quarterly report about the types and amounts of chemicals found in ground-water samples. ✓ *Vernay will submit quarterly reports about the ground water during the entire corrective action process.*

June 2003

Begin treating contaminated soils in place (if Vernay and EPA decide this is the best option for cleaning the soil). ✓

September 2003

Install more wells on and off the property to study the ground water and the water in the sewer that collects runoff water from storms. ✓

December 2003

Submit a report — called a ground-water monitoring technical memorandum — that sums up results from the quarterly ground-water testing program.

June 2004

Submit the phase one facility investigation report, which describes all the results from testing the ground water and storm sewer water. The report will help EPA and Vernay decide if more wells are needed to study ground water farther away from the site.

Phase two of the RCRA facility investigation

Begin a study of contamination in ground water deeper under the site, if necessary. This would be done as part of a phase two RCRA facility investigation.

Submit the environmental indicator report for human health to show Vernay has removed health risks to people.

December 2004

Submit the phase two facility investigation report, providing details about the extent of all site contamination.

Winter 2004 - 2005

Submit the environmental indicator report for ground water, which shows contaminated ground water has stopped moving away from the site.

Summer 2005

Propose an option for cleaning up any remaining contamination on the property and in the ground water. This is called the final corrective measures proposal.

EPA holds a comment period and public meeting for the public to comment on cleanup options.

Vernay begins cleanup.

** Resource Conservation and Recovery Act*

Contaminated ground water brought to the surface by the capture wells is treated using carbon filtration and is then discharged into the sanitary sewer.

Capture wells help to clean ground water

Vernay has installed two capture wells – also known as pumping wells. The well installed in 1999 is approximately 65 feet deep and began pumping in January 2000. The other well, installed in January 2003, is approximately 100 feet deep. It is on the northeast corner of the property just off Dayton Street. The capture wells serve two purposes. First, they help to clean ground water by pumping contaminated water from the ground, treating it inside the plant. (Cleaned water is discharged into the sanitary sewer.) Second, the capture wells slow the spread of contaminants because contaminated water is continuously pulled back toward the facility, away from uncontaminated areas.

Based on this year's tests, EPA believes pumping from the new capture well may be helping stabilize and in some cases drop contaminant levels, but it is too soon to draw conclusions. Samples collected in the future will confirm the effect of the capture wells and indicate whether additional wells would be helpful. As required in the agreement with EPA, Vernay will be submitting a report called a ground-water monitoring technical memorandum, which will evaluate ground water results and discuss the effectiveness of the capture wells.

Soil study concludes no action now

In the 2002 legal order with EPA, Vernay agreed to study the need for an interim cleanup of highly contaminated soil beneath the Vernay facility. EPA requires interim cleanups when there is an immediate and substantial danger to people or the environment.

The study concluded that because people don't come into direct contact with the soil, an *interim* cleanup is not needed. EPA agrees with this conclusion. The capture wells are pumping out contaminants, keeping contaminated ground water in check.

Although the risk does not require immediate action, Vernay evaluated various soil cleanup technologies for future use. The study's focus was on how to best reduce contaminants to safe levels and the effects of physical structures on each technology's effectiveness. The evaluation also identified gaps in current information that will need to be addressed in future studies.

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About the Vernay project

The Vernay Laboratories Inc. Dayton Street facility sits on approximately 10 acres in the northwest side of Yellow Springs, Ohio. Since 1951, Vernay has produced molded rubber parts for use in cars, appliances and medical equipment.

Contamination was first found in soil and ground water on the property in 1989. In 1998, Vernay began an investigation of the contamination. A capture well was installed, and in January 2000 began pumping out contaminated ground water. U.S. Environmental Protection Agency and Vernay signed a legal agreement in December 2002 requiring the company to study and clean up contamination at the facility and in neighboring property.

This mailer focuses on the ground water investigation and provides a timeline of activities required by the agreement.

Vernay to request information from nearby residents

If you live within 2-3 blocks of the Vernay facility, you will be receiving a short survey in the mail sometime in the next two months. The purpose of the survey is to identify features in your home or yard that could come in contact with contaminated ground water, now or in the future. Such features include private wells used for drinking, bathing or watering, sump pumps, cisterns or ponds. For your own protection, EPA encourages you to fill out the survey and return it promptly. A consultant for Vernay will contact homeowners who have identified features and may request to come to your home to speak with you in person and to inspect the feature.