United States
Environmental Protection
Agency

Pollution Investigation Complete; Risks to Residents Low

Vernay Laboratories Inc.
Yellow Springs, Ohio January 2006

U.S. Environmental Protection Agency Region 5 has completed its review of a study of pollution in and around Vernay Laboratories Inc. One of the key preliminary findings from the extensive investigation is that in the short term, the contamination released from the Vernay facility poses little health risk to nearby residents or plant and construction workers. However, the study also found that if people become exposed to the pollution at sufficient levels, the contamination could pose harm.

The study, called a Resource Conservation and Recovery Act facility investigation phase II, is part of an EPA process called "corrective action." The RCRA law requires facilities to begin corrective action when there is a suspected chemical release from past operations. Corrective action removes pollutants from the environment or contains them, reducing the potential for exposure to people and the environment. In September 2002, Vernay Laboratories signed a legal agreement with EPA requiring the company to study and address contamination on and around its 10-acre facility in Yellow Springs.

Vernay background

Since 1951, Vernay has made molded rubber parts for the automotive, appliance and medical equipment markets. The contaminants of concern at the Vernay site belong to a family of chemicals called "volatile organic compounds." VOCs are hazardous chemicals that evaporate easily giving off vapors, some of which can be dangerous if inhaled in sufficient quantities. They also tend to dissolve in ground water (underground supplies of fresh water). At Vernay, three VOCs are causing the most problems. They are tetrachlorethylene, abbreviated PCE; trichloroethylene, or TCE; and 1,2-dichloropropane, known as 1,2-DCP. PCE and TCE are used as metal degreasers in manufacturing while 1,2-DCP is a pesticide common many years ago.

These chemicals not only polluted soil at the Vernay plant but also got in the ground water underneath the property and formed "plumes" (bodies of contaminated water). A small 1,2-DCP plume lies beneath Vernay's front yard. Two plumes – one of TCE, the other of PCE – have moved east and south off the Vernay site into ground water beneath residential areas. These plumes could make water drawn from wells in the area unsafe for drinking, but results of a residential well survey confirmed that most homes in the study area are hooked up to municipal water, which is untouched by the pollution (see box, next page). Maps of the contaminant plumes can be found in appendix 5 and in figures 10 - 13 of the RCRA facility investigation phase II report, available for review at the library or on EPA's Web page (see box, left).

Want to learn more?

These EPA representatives are available to discuss the Vernay situation with you:

Bri Bill
Community Involvement Coordinator
Office of Public Affairs (P-19J)
EPA Region 5
77 W. Jackson Blvd.
Chicago, IL 60604
(312) 353-6646
(800) 621-8431 Ext. 36646
bill.briana@epa.gov

Trish Polston
Project Coordinator
Waste, Pesticides and Toxics Division (DW-8J)
(same address)
(312) 886-8093
(800) 621-8431 Ext. 68093
polston.patricia@epa.gov

Read all about it

To learn more about the Vernay pollution investigation, you may review official site documents at the **Yellow Springs Community Library**, 415 Xenia Ave.

EPA's Web site on Vernay also contains a lot of easily accessible information:
www.epa.gov/region5/sites/vernay
EPA regularly updates the Web site with ground water test results and other information including the most recent study.

Residential well survey

A well survey to identify households that might be at risk of exposure to contaminated ground water confirmed only 20 private water wells within the study area. The four-month survey began in December 2003. Most of these wells were either not in use or used only for "non-potable" purposes – lawn and crop watering, car washing, swimming pool use. Those that were used for drinking and bathing have been tested and found to be within EPA safety guidelines. A follow-up survey was completed late last year to identify changes in well use. With the permission of the owners, three wells were closed by Vernay and the Greene County Combined Health District and hooked to municipal water. A "change in use" survey will be done annually.

Investigation results

Before Vernay can propose a cleanup plan, it has to find out the extent of the pollution and determine health risks to people and the environment. In the two-phase RCRA facility investigation, environmental contractors hired by Vernay gathered lots of information about the contamination in soil and ground water from samples taken from numerous ground water monitoring wells and soil borings dug in and around the plant.

The Agency approved the first phase last year and second phase last month. Both reports are on EPA's Web page, but here are the major conclusions regarding ground water contamination:

- The chemicals from Vernay have not reached the deep Brassfield Aquifer and no further tests are needed there. (An aquifer is an underground water-bearing rock formation.) Pollution is found in the upper portions of the more shallow Cedarville Aquifer, which lies 20 to 100 feet below the surface.

- Thanks to ground water sampling from numerous monitoring wells, officials have a good idea of the extent of contamination in the ground water beneath the Vernay property and in the adjacent residential area. Sampling results thus far suggest the plumes are not expanding very much. Vernay will be submitting a more detailed report in the near future about this. It is likely that the two "capture wells" Vernay installed on its property to pump ground water to the surface and treat the contamination may be slowing the advance of the plumes.

Good news about risks to people's health

As part of the RCRA facility investigation and an earlier study, Vernay looked at the risks to human health *(see shaded box on the next page for explanation of "health risks").* The earlier study, called an environmental indicator report for human health or CA725, studied whether health risks were within EPA safety guidelines. It concluded contamination does not pose immediate health threats. The RCRA facility investigation included a much more in-depth health risk study to find out short-term and long-term problems.

The study identified groups of people who could be exposed to pollution now and in the future. They include plant workers; construction workers who dig into the ground on the property and in neighboring areas; so-called "trespassers" on the Vernay site; nearby residents who have a private well or could theoretically dig a new private well and either use the water to drink, water gardens or fill swimming pools; and waders in a nearby unnamed creek.

Scientists identified three main ways people in and around the Vernay property could be exposed to dangerous chemicals. Environmental scientists call these "exposure pathways." The exposure pathways at Vernay are: direct contact with contaminated soil, incidental swallowing of contaminated soil, breathing contaminated water vapors seeping through cracks in buildings and swallowing contaminated ground water.

The RCRA facility investigation and CA725 concluded that current threats to people's health are low. The Vernay property is either paved or covered with grass, so contaminated soil is not likely to be stirred up either by work or wind. Off the Vernay site, existing private water wells contained no contamination or contained low levels that fell within EPA's safety guidelines.

Future risks

While those findings are great news, the study raised

Health risks explained

People are naturally scared when they learn that pollution can cause health problems. Living or working in or near a polluted area, however, does not mean a person will get sick. The chance of getting sick is called "risk" and is usually expressed in numbers by factors of 1,000s. For instance, a common risk factor in the environmental field is 1-in-10,000. A 1-in-10,000 cancer risk, for example, would mean that for every 10,000 people exposed to a particular pollutant over a lifetime of 70 years, one additional person could get cancer over and above the expected number of cancer cases for that geographic area.

Environmental scientists use complicated calculations to find risk but they can be summarized with this simple formula:

Risk = Exposure X Hazard

Exposure is how much and how long a person comes in contact with contamination. Hazard means a potential source of harm to people and the environment with the emphasis on potential. To most people hazard and risk are the same thing, but not to environmental scientists. Some chemicals are more hazardous than others. In other words, some chemicals have more potential to cause health problems.

It can be hard to understand how exposure, hazard and risk are related. An example that might help is frostbite. Everyone knows that extreme cold poses a hazard (potential problem) but if you wear a coat, gloves and a hat (controlling exposure), your chances of getting frostbitten go way down. In other words, the risk posed by the cold is directly related to how much you're exposed to it.

Scientists know how harmful volatile organic chemicals can be. The main challenge in the Vernay investigations was determining if people are currently being exposed and if exposure could occur in the future.

concerns. The potential exists that workers could be exposed to unsafe levels of on-site pollution.

And if the chemicals remain unaddressed in soil and ground water, nearby residents could be exposed to pollutants through existing private wells or new wells drilled into the area. While most people drink municipal water, it is possible water from existing or new private wells could expose people to the VOCs.

Scientists estimate these possible future health risks to workers and nearby residents will exceed EPA's safety limit of one cancer case in 10,000 exposed individuals. That means if 10,000 people were exposed to contamination for a lifetime of 70 years, more than one additional person would get cancer than would otherwise happen in the Yellow Springs area. That kind of health risk is unacceptable and means Vernay will have to do something to clean up or contain the pollution or otherwise limit potential exposure.

Next steps

With the completion of the RCRA facility investigation, the corrective action process enters a new phase. Vernay has until mid-June to submit an environmental indicator report for ground water, or CA750. This report will analyze ground water data to confirm whether or not the plumes are expanding. Once reviewed and approved by EPA, Vernay will have six months to submit a proposed cleanup plan. EPA will then present a cleanup plan – either Vernay's recommendation or another option – to the public for review and comment. EPA will hold a hearing to present the plan and take oral and written comments.

Based on the current schedule (see EPA's Web page for regularly updates), EPA expects to develop and publicize this plan – called a statement of basis – next year. EPA may pick the plan presented – perhaps with changes suggested by the public – or select another based on additional information or comments from the public. Vernay will then begin designing and implementing the actual cleanup work.

Project Timeline - Vernay Laboratories

Winter 2002 - Summer 2004: Vernay conducts phase one facility investigation to define nature and extent of contamination, identify any risks to people that need to be addressed in the short-term, conduct a residential well survey, develop a computer model to map ground water and contaminant flow. Approved October 2004.

July 2004: Vernay submits environmental indicator report for human health, called a CA725 report, which documents that immediate threats to human health are under control. Approved September 2004.

Summer 2004 - December 2004: Vernay conducts phase two facility investigation. This study is designed to: 1) better define soil contamination at facility, 2) assess how contamination moves in ground water and 3) assess how people and plants and animals can be exposed to contamination. Approved December 2005.

Mid-June 2006: Vernay must submit environmental indicator report for ground water, called a CA750 report, which must document that contaminated ground water has stopped moving away from the site.

180 Days from EPA Approval of CA750 Report: Vernay will evaluate options and present a cleanup plan for addressing contamination that poses unacceptable risks at the facility or as a result of operations. This is called the final corrective measures proposal.

2007 (tentative): EPA prepares a statement of basis which proposes EPA's recommendation for addressing contamination. EPA holds a 30-day public comment period and a public hearing. EPA prepares a final decision document which describes how contamination will be addressed.

Upon Notice by EPA: Vernay designs and implements final corrective measures.

EPA
United States
Environmental Protection
Agency

Region 5
Office of Public Affairs (P-19J)
77 W. Jackson Blvd.
Chicago, IL 60604

VERNAY LABORATORIES: Pollution Investigation Complete; Risks to Residents Low