



THE MEMPHIS DEPOT TENNESSEE

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Cleanup plans target underground chemical seepage

By Tom Charlier
The Commercial Appeal

At two Memphis facilities bearing little in common and five miles apart — the old Defense Depot and the Velsicol Chemical Corp. plant — the same insidious processes were at work nearly 90 feet underground.

Chemical contaminants, bleeding downward from old waste trenches and industrial spills and discharges, gathered in a water-saturated zone of sand and gravel. Over the years, the water that slowly flows through

the aquifer apparently carried the contaminants far off-site from both facilities.

Now, in separate but similar cleanup projects, officials plan to use batteries of water wells and somewhat experimental methods to retrieve or intercept the migrating contaminants before they threaten the public. The projects both are considered "interim" measures to buy time before more comprehensive cleanups can be launched at the two installations.

The Velsicol project, approved last month by the U.S. Environmental Protection Agency and the Tennessee Department of

Environment and Conservation, is expected to get under way in January. Officials at the Memphis Defense Distribution Depot, meanwhile, opened a public comment period on their plan last week.

Both contamination problems are considered serious, according to federal and state officials. The Velsicol case, in fact, "ranks right up there with the worst I've seen," said James Smith, EPA's project manager for the facility.

However, so far, the contaminants remain restricted to the so-called "fluvial" aquifer, the relatively shallow groundwater

zone found in the layer containing ancient deposits laid down by the Mississippi River. None has reached the Memphis Sand, the deep aquifer that supplies local drinking water and is protected beneath a 200- to 300-foot layer of dense clay in many areas.

That could change at the depot, on the west side of Airways in South Memphis. There, potentially cancer-causing organic chemicals such as trichloroethylene and carbon tetrachloride, and toxic metals such as arsenic and lead, are seeping westward toward the Memphis Light, Gas & Water Division's Allen Well

Field, which supplies 15 percent of the water used by local residents.

The contaminants, discovered about three years ago, apparently emanated from an old disposal field on the northwest corner of the depot and have been found in levels up to 1,020 times the federal standard for drinking water. They could be drawn down into the Memphis Sand aquifer if they reach the LG&W well field, officials say.

The proposed groundwater action plan for the depot calls for the installation of wells to locate

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the leading edge of the plume of contaminated water, believed to be somewhere west of the base. Once it is found, recovery wells would be installed there to form a "hydraulic barrier" and intercept the chemicals.

The water pumped from the wells would be discharged into the Memphis sewage-treatment system. If tests show the contaminant levels are too high, the chemicals will be removed first through a saporizer.

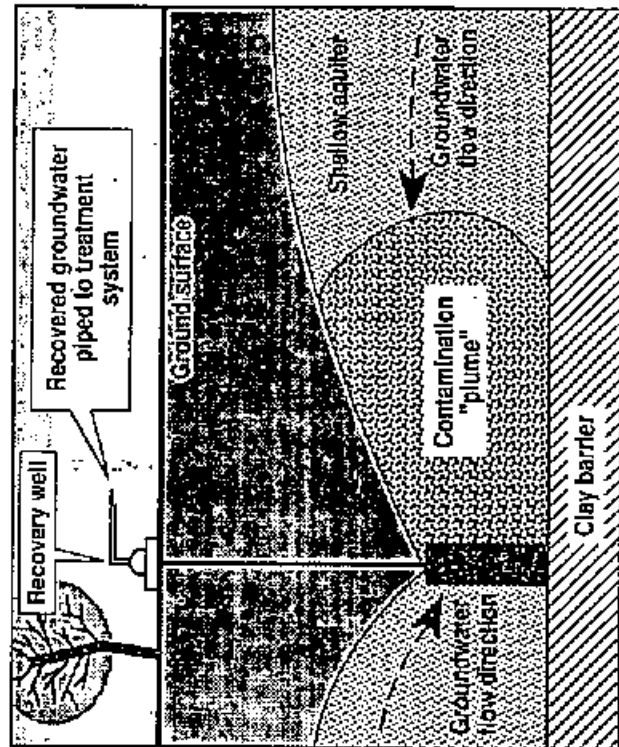
"On the basis of current information, this alternative appears to offer the most reasonable approach for the protection of the drinking water supply and containment of the plume," says a depot report assessing eight alternatives.

The wells would cost \$500,000 to install, according to the report. But it may be another year and a half before the system is operating.

Eventually, the depot will draft a long-term cleanup plan for Dunn Field, the area where solid and hazardous wastes were buried between 1954 and 1970. At Velsicol, the contamination that was discovered in 1991 is believed traceable to discharges and spills decades ago. A long-term investigation at the 70-acre site at 1199 Warford in North Memphis has discovered some chemicals thickly pooled into "globules of oily material" underground, according to a re-

Extracting pollution

Separate proposals for dealing with groundwater contaminants outside the Defense Distribution Depot Memphis in South Memphis and the Velsicol Chemical Corp. involve the use of recovery wells, as shown in diagram. At the depot, the wells would be installed "down-gradient" of the pollution to intercept the chemicals as they flow westward. At Velsicol, the wells would be placed at the plant perimeter and would pump hard enough to reverse the flow of tainted water that already has moved offsite.



By Charles Tubbill

cent report on the investigation.

Like the contamination at the depot, the Velsicol chemicals were found to have migrated off site. The contaminants, including such carcinogens as carbon tetrachloride and methylene chloride, have been found 1,000 feet west of the plant perimeter in concentrations up to 10 times the federal drinking-water stan-

dard.

Groundwater flows westerly beneath the plant and then appears to follow the path of Cypress Creek, said Gary J. Hermann, environmental project manager for the Memphis Environmental Center Inc., which was formed by Velsicol and is heading up the study.

As part of the plan approved

by state and federal officials, Velsicol will install four wells along the western edge of its property. Although the contaminants have migrated beyond that point, the wells will create "hydraulic containment" that iterally pulls chemicals uphill back toward the plant.

"Our hydraulic models show that we can reverse the gradient, so there will be no further groundwater contaminants leaving the site and flowing to the west," Hermann said.

Construction on the wells will begin in January. They should be pumping by the middle of next year. The contaminants recovered by the wells will be stripped from the water, which then will be discharged into the city's sewer system.

The project also includes measures to extract the dense globules of contaminants beneath the plant. In later phases of the investigation, officials will try to determine just how far off site the chemicals have gotten.

C. Lynn Sharpe, director of environmental facilities for the Memphis Environmental Center, said Velsicol doesn't want to wait for the completion of the investigation before taking action on the tainted groundwater. "We want to get that water moving back this way," he said.

EPA's Smith, while saying the investigation has uncovered "tremendous" contamination at Velsicol, commended the company's response to the problem.

"I'll say this about Velsicol: They're doing an excellent job," he said. "They've become very proactive environmentally."

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