Cleaning polluted ground near Cheyenne will be costly

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CHEYENNE - Now that the federal government has all but taken responsibility for thousands of gallons of industrial solvent leaked into the ground near Cheyenne during the Cold War, the discussion has turned to cleanup.

The Wyoming Department of Environmental Quality will be pushing for an extensive cleanup of the trichloroethylene dumped at seven former nuclear missile sites around Cheyenne during the Cold War, said Jane Francis, geological supervisor with DEQ's Water Quality Division, who is overseeing the state's interests in the contamination area.

Most of the contamination plumes in Wyoming are fairly isolated. The exception is the former Atlas 4 site, located 16 miles west of town. That plume is estimated to extend up to 10 miles from the source, and reaches a depth of 300 feet.

The plume has contaminated city water wells and land the city plans to drill for additional municipal water. TCE has also been detected in private wells.

The U.S. Army Corps of Engineers has committed to improved treatment equipment at Cheyenne's water plant to remove TCE from city drinking water.

Right now, the city's water utility treats TCE with equipment designed to remove radon gas. The Corps has agreed to install a system intended for TCE, said Jeff Skog, project manager for the Army Corps.

The Corps has also begun to install water filtration equipment at private homes affected by the contamination.

It could be far more tricky, scientists said, to clean up the source of the TCE at the missile sites, and the contaminated aquifer that provides water to Cheyenne in the summer.

But Francis said it is important to clean up the source of the contamination because it could otherwise continue to pollute for a century or more.

The plume could also eventually reach Cheyenne, where it would create more problems, officials said.

Here are several possible cleanup options:

n Soil vapor extraction, whereby harmful vapors are removed by applying suction that draws contaminants out of the soil, may be one of the best ways to clean up the source of the contamination, officials said.

"You are actually pulling the contaminants out above the water table," said Francis, adding that a soil vapor extraction pilot project at one of the sites has yielded positive results.

n Another technique known as "injection" could be used to clean up contaminants near the source. It requires injection of a compound that neutralizes and breaks down the TCE, rendering it harmless.

n A similar process called bioremediation uses microorganisms, enzymes or fungi to return the contaminated soil to its original condition. In some cases, micro-organisms are injected into the soil, where they consume the TCE.

n A technique known as "pump and treat" could be used to clean up contaminated groundwater.

The technique uses a series of wells drilled across the contamination plume to draw out contaminated water, treat it and return it to the aquifer.

If done correctly, the technique could stop or slow the spread of the plume, while protecting downstream municipal and private wells, officials said.

"They clean up the water and then they reinject it," said Francis, adding that the pump-and-treat method could be costly for such a large plume of TCE.

"That could be very, very expensive," Francis said.

No matter which methods are used, cleanup of the TCE is likely to take years. A typical plume might take around 30 years to clean up, but this plume is far larger than most.

However, Francis said she is confident that with the right techniques, and funding, the problem can be fixed. She said the state will be looking to the Army Corps of Engineers for guidance and funding to address the pollution.

"This is all really doable stuff," Francis said. "It's going to be expensive, but it's all proven technologies."

That perspective is not shared by everyone.

John Cherry, emeritus professor of the University of Guelph in Ontario, Canada, and a recognized expert in the area of trichloroethylene contamination, said the record for cleaning up major TCE plumes is not good.

The plume west of Cheyenne could be especially tricky because of the size and depth of the plume, he said.

"The precedent of successful cleanup of major source zones causing major plumes, very few have been cleaned up," Cherry added.

For its part, the Army Corps of Engineers plans to make public this year a draft study of the feasibility of several cleanup options, Skog said.

Skog confirmed that the study will include information on the feasibility of the pump-and-treat method and others, but he declined to go into specifics until the report is released to the public.

He admitted that all of the possible remedies will be costly and that cleanup is "somewhat limited because of the geology of the source area."

But Skog said the Corps is committed to doing what it can to clean up the contamination.

Public meeting
The state Department of Environmental Quality has scheduled a public meeting July 28 in Cheyenne to update the public on the latest test results concerning TCE contamination near the city.
The meeting begins at 6 p.m. in the Cottonwood Room of the Laramie County Public Library.