

# The Buffalo News

## Tackling West Valley's leaking radiation

### **An experimental project to filter groundwater of Strontium-90 is about ready to be tested**

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Published: October 22, 2010, 7:22 AM

Updated: October 22, 2010, 8:21 AM

Engineers have been working for more than a decade to figure out how to stop radioactive material leaked years ago from the West Valley Demonstration Project from seeping into a nearby creek that flows toward Lake Erie.

They've built scale models, run sophisticated computer programs at the University at Buffalo and dug a trial containment wall on site.

All those years of work will be put to the test by next week, when construction on a trench more than two football fields long and filled with a volcanic mineral is complete.

"We don't often see the research that we do translate into projects that are helping communities and cleaning up the environment, especially something as innovative as this," said Alan J.

Rabideau, a UB professor of civil, structural and environmental engineering. "For me, this is about as good as it gets in terms of combining research and education with actually solving a problem."

The problem, in this case, is that groundwater that trickles underneath the former nuclear waste reprocessing plant has been picking up a radioactive material known as Strontium-90 that was leaked into the ground under the plant decades ago.

The contaminated water then seeps into nearby Erdman Brook. The brook connects to Cattaraugus Creek, which eventually flows into Lake Erie.

While engineers believe the amount of Strontium-90 in the water is too small to pose an immediate health and safety risk, they want to stop the flow and address community concerns while government agencies determine the future of the West Valley site.

The method they've settled on — an in-ground permeable wall that works much like gravel in a Brita water filter — is expected to trap radioactive Strontium-90 for at least 20 years as groundwater passes through.

Engineers working on the project say it uses less energy, is more effective and cheaper than the traditional way of cleaning water — pumping it from the ground and treating it.

"This is a passive technology that, once it's in the ground, the only expense we have is just the monitoring aspect of it," said Rick Frappa, vice president and principal hydrogeologist for AMEC Geomatrix Inc., an Amherst firm that designed the wall.

If all goes well, they hope to shut down two pumps that have been removing and treating 2 million to 4 million gallons of contaminated water a year at the West Valley site.

"Once it's in, if it works right, we're hoping to get at least 20 years of removing Strontium without doing anything other than watching it," said John Chamberlain, technical adviser for West Valley Environmental Services. "Just on those two little wells, we're spending anywhere between \$300,000 and \$500,000 a year on treating water."

While the pump-and-treat system currently used on the site treats only a portion of the groundwater, the in-ground wall is expected to filter all of the water that carries Strontium-90 toward the creek.

The \$10 million project — which received \$7 million in federal stimulus funds — will create an 850-foot-long ribbon of volcanic mineral known as zeolite between the plant and the creek. Engineers expect the Strontium-90 to latch on to the zeolite as water passes through, cleaning the water of radioactive material.

Brian Smith, Western New York program director for Citizens Campaign for the Environment, said installing the zeolite wall is a positive step toward keeping the radioactive material out of nearby creeks, but he is cautious about its long-term effectiveness. "It is experimental, and we're not positive that it's going to work," Smith said. "We certainly support them moving forward with this, but looking at the bigger picture, we need to get back to the fact that this is just a Band-Aid to deal with the problem."

Citizens Campaign and other groups have called for the federal government to commit to a full

cleanup of the West Valley site. The plant, which operated between 1966 and 1972, processed used reactor fuel to pull out uranium and plutonium for reuse. Efforts to clean up waste left on the site have been under way since 1980.

Officials discovered that Strontium-90 was spreading across the site in groundwater in 1993. They've since traced it to material that leaked under the plant while it was operating, Chamberlain said.

Once complete, the zeolite trench will be the largest in-ground wall of its kind used to filter out radioactive material.

"For decades, we've been spending a lot of money to remove groundwater, but we have restored very few sites because it's difficult to get the contamination out. This approach is different," said Rabideau, who has been working with UB graduate students to test the effectiveness of zeolite in filtering out the radioactive material. "It's a greener technology in that we're not using a lot of energy, and we're preventing the contamination from leaving the site."

Construction on the trench, which started Sunday, is on target to wrap up by the end of the week. A 200,000-pound machine designed specifically for this project has been ripping through the ground, pulling out dirt and replacing it with the green, sandlike zeolite mined from Idaho.

The machine, a one-pass trencher, will place 1,940 bags of zeolite that each measures one metric ton into the ground.

Contaminated dirt removed from the trench will be contained on site.

Eventually, engineers will either have to figure out what to do with the strontium trapped in the zeolite and in the dirt on the West Valley site or wait for it to naturally turn into a nonradioactive material.

"The goal is to contain it, and if you contain it, all radioactive materials at some time turn into something nonradioactive," Chamberlain said. "The longer it stays here, the longer it gives it to break down and turn into a nonradioactive form."

Chamberlain said engineers expect the zeolite wall to work for at least 20 years. Within 10 years, the Department of Energy is scheduled to make a decision on how to fully decommission the West Valley site.

Judith Einach, a member of the Coalition on West Valley Nuclear Wastes, said the citizens group hopes the zeolite wall will keep the radioactive material from spreading into the environment but wants to ensure it is continually monitored.

Eventually, she said, a decision will have to be made to either remove the waste or keep it safe until it degrades.

"It's going to take a long time for this site to be cleaned up," Einach said. "This is not going to

happen overnight. So some of those questions — like what do you do with the collected radiation in the zeolite wall — those things you can't answer now, but you definitely have to answer them within the possible century that it's going to take to clean this site up."

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