

News from the Savannah River Site

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FOR IMMEDIATE RELEASE

The following recently ran in "EM Update," a newsletter created and distributed by the U.S. Office of Environmental Management.

SRS Feeds 'Bugs' Oil to Chomp Away at Contamination

AIKEN, S.C. – Savannah River Nuclear Solutions is using vegetable oil as a low-cost remediation approach to accelerate chemically-contaminated groundwater cleanup at the Savannah River Site (SRS).

"We've been extremely pleased with the results to date, and others have noted the success of the project as well," said Chris Bergren, an environmental stewardship manager at Savannah River Nuclear Solutions, the SRS management and operations contractor.

Workers inject highly concentrated amounts of vegetable oil into the ground, where it mixes with naturally occurring bacteria and the contamination. Unable to differentiate between the oil and the oil-coated chemicals, the voracious bacteria rapidly eat both and deplete the soil's oxygen. The rate of cleanup increases with time because the treatment spurs bacteria growth.

The chemicals were part of organic solvents, like those used at dry cleaning shops. They were used for cleaning purposes for Cold War operations at several SRS nuclear facilities, most of which have since closed. The solvents leached into the soil from buildings that have been demolished and replaced by green fields.

"We like to call the vegetable-oil-eating bacteria bugs," Bergren said. "When fed thousands of gallons of inexpensive vegetable oil, the bugs will destroy large quantities of organic solvents fairly quickly."



Savannah River Nuclear Solutions engineering and technical support specialist Keith Hyde measures the flow of vegetable oil during an injection process. The oil encourages growth of the underground population of naturally occurring, chemical-eating bacteria at the Savannah River Site

This approach has led to cost savings over the previously used “pump-and-treat” technology involving highly mechanized air strippers, Bergren said. The system extracted sub-surface water and treated it in an above-ground system, stripping the hazardous chemicals by blowing air through the water.

“Though the method was effective, it cost about \$1 million dollars a year to operate, plus the unit had to be shut down and rebuilt about three times over the course of its lifetime,” said Bergren. “Our modeling indicated it would require 30 years to complete the cleanup process using this technology for a total cost of at least \$30 million dollars.”

Recent testing after injecting vegetable oil down multiple wells at the project site indicate the area is now approximately 98 percent free of organic solvents.

“Our desire is to avoid electrical power and move towards more natural, passive methods during environmental cleanup work,” DOE-Savannah River Infrastructure and Environmental Stewardship Deputy Assistant Manager Angelia Holmes said.

Savannah River Nuclear Solutions is a Fluor-led company whose members are Fluor Federal Services, Newport News Nuclear and Honeywell, responsible for the management and operations of the Department of Energy's Savannah River Site, including the Savannah River National Laboratory, located near Aiken, South Carolina.

Visit us on the web at www.savannahrivernuclearsolutions.com