

DT Townsend
Savannah River Nuclear Solutions
(803) 952-7566
dt-lawrence.townsend@srs.gov

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Savannah River Site Uses Oil as 'Bait' to Help Destroy Solvents in Groundwater

AIKEN, S.C., June 9, 2022 – Engineers from Savannah River Nuclear Solutions (SRNS) have successfully reduced degreasing solvents beneath the Savannah River Site (SRS), using a technology that injects a form of iron and oil into groundwater.

"The oil attracts the Cold War cleaning solvents while the iron degrades and neutralizes the contamination," said Shannan Lucero, SRNS manager for area closure projects.

Savannah River Nuclear Solutions environmental engineers Bryce Garner, left, and Adam Willey ask questions of lead operator Daniel Ferrell, right, from field services contractor Cascade Environmental, as he describes how equipment injects oil and iron into the aquifer beneath the Savannah River Site.

During the nuclear arms race with the Soviet Union, tons of grease-cleaning solvents were released from production buildings in the site's M Area into clay-bottom holding ponds, known as basins. Although it was the best technology at the time for storing this type of waste, the solvents began to slowly — over decades — leach into the groundwater, forming a plume beneath SRS.

Use of innovative technology to close basins and eliminate the solvents beneath the open fields where the production facilities once led to exceptional cleanup success.

"Though half of the chemicals have already been safely and removed, we will continue to effectively operate cleanup equipment the two primary areas where these solvents have pooled within the said SRNS Environmental Engineer Branden Kramer. "We know the naturally move from the water into the oil, allowing the iron to finish kind of like feeding your pet a pill wrapped in cheese."

SRNS purchased tons of commercially manufactured micron-sized iron mixture into the ground at the most needed locations. Studies have shown the iron neutralizes about 90% of the affected solvent.

"It's amazingly effective in its simplicity. We're really excited about the potential this cleanup technology presents for us and other Department of Energy sites," said Kramer.

"Environmental cleanup at SRS is often like a series of ongoing, often overlapping battles with different types of waste," said Lucero. "Some of the waste above ground and some below, some chemical and some radioactive. We're attacking it with cost-effective, innovative, and frequently low-energy, sustainable green technology. We're confident this will lead us to achieving our long-term cleanup goals for the site."

Lucero also expressed her appreciation for the dedication and resourcefulness of the people within the Area Closure Projects organization of SRNS, DOE and SRS regulators.

"This groundwater remediation project in M Area is a great example of the safe and steady progress continually being made across the Savannah River Site," she said.

Savannah River Nuclear Solutions, a Fluor-led company with Newport News Nuclear and Honeywell, is responsible for the management and operations of the Department of Energy's Savannah River Site located near Aiken, South Carolina.



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