

# Clemson research cleans up with edible oil

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Oil and water don't mix, and that could be the key to edible vegetable-based oil being the answer to contaminant clean-up.

Clemson University researchers, in conjunction with the Savannah River National Laboratory (SRNL), are testing vegetable oil as a way to prevent contaminants from getting into groundwater aquifers. They say the method has the potential to help clean up chlorinated solvents, which are among the most common groundwater contaminants caused by industry. The study, which is taking place at the U.S. Department of Energy's Savannah River Site, is funded with a \$35,000 grant from SRS through the South Carolina Universities Research and Education Foundation (SCUREF).

Clemson University geologist Larry Murdoch said the oil is injected through hydraulic fractures made 20 to 30 feet into the ground. When injected, the vegetable oil draws in oil-based contaminants that have leaked from pipes or tanks. If mixed with water, the contaminants separate as droplets, with small amounts dissolving into the water and making it hazardous. But, if another oil is introduced, the contaminants steer clear of the water, drawn instead towards the edible-oil source.

"Something else can happen to clean up the contaminants," said Murdoch. "Some microbes in the ground subsurface will degrade solvents. The edible oils create the right conditions for those kinds of microbes to flourish, so they seek out the contaminants and break them down. We hope the oil will both trap and destroy contaminants underground."

SRNL Laboratory Director Todd Wright of Washington Savannah River Company said collaborative research that combines the expertise at Clemson with that of SRNL is one of the best ways to advance the development of new methods for cleaning up and restoring the environment.

"By working together, making use of our respective knowledge bases, we can add new, cost-effective tools to the nation's toolbox for addressing widespread environmental issues," he said.

Since February, SRNL investigators have monitored levels of contaminant vapors and other indicators to determine whether the oil is attracting the contaminants at the test site. Murdoch said preliminary results are exciting, suggesting the process is working as anticipated. The project wraps up at the end of September.

Source: Clemson University

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