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Microbes that can mop up uranium

Thursday October 16, 2003

[The Guardian](#)

Cold war era uranium processing has left contaminated sites across the world. Traditional pump-and-treat methods can take decades and expose workers to toxic levels of uranium. Now a better solution is being proposed by Robert Anderson, of the University of Massachusetts Amherst, and his colleagues.

Anderson's team has found a way to encourage microbes called geobacter to convert soluble uranium to insoluble uraninite. Uraninite stays put instead of mixing with water used for drinking or irrigation. "I think this is something we might be using in the near future," says Anderson.

"This is a major step," agrees Jonathan Istok of Oregon State University, who has had similar success in using microbes to mop up both uranium and another element, technetium. "We're pretty close to being able to apply this to the real world," he says.

Geobacter are best known as iron-eaters, but in 1991 Derek Lovley, also at Amherst, proved the bugs could metabolise uranium in the laboratory.

The bacteria turn up in sediments across the United States, but usually in small quantities. Anderson's team stimulated the bugs to multiply in a contaminated underground aquifer in Colorado by adding acetate, which is one of their favourite nutrients.

Within days the geobacter population had boomed and soluble uranium levels began to drop. After 50 days, 70% of the uranium had been converted into uraninite.

The scientists chose a site that was contaminated by low levels of uranium from mining residue, but they hope the technique might eventually be used to clean heavily contaminated sites, such as those run by the US department of energy, which funded the research. "We know these

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organisms can grow in extremely high concentrations of uranium," says Lovley.

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