

3-13-1991

Bacteria Help Degrade Groundwater Chemicals, According to UD Biologist's Studies

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Recommended Citation

"Bacteria Help Degrade Groundwater Chemicals, According to UD Biologist's Studies" (1991). *News Releases*. 7209.
https://ecommons.udayton.edu/news_rls/7209

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The University of Dayton

News Release

March 13, 1991
Contact: Jim Feuer

BACTERIA HELP DEGRADE GROUNDWATER CHEMICALS, ACCORDING TO UD BIOLOGIST'S STUDIES

DAYTON, Ohio -- Benzene and other organic solvents and fuels have been buried for decades in poorly designed toxic waste dumps and leaky storage tanks and drums. Fortunately, microorganisms--mostly bacteria--in groundwater and subsurface soil are capable of biodegrading these toxic chemicals.

Studies by a University of Dayton microbiologist have found they are degraded even faster by adding fertilizer to the contaminated soil and water.

"When these chemicals get into the groundwater and we add some phosphorus and nitrogen fertilizer just like farmers use, the organisms degrade the chemicals faster, and if they degrade them faster, it's less likely the chemicals will go on to contaminate further sites," says Roy M. Ventullo, associate professor of biology, who has been selected to receive the 1991 Sigma Xi Award for his research at UD on the environment.

"Different types of microorganisms break down particular chemicals, and these microorganisms increase in number when we increase nutrients in appropriate amounts and combinations."

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To study organic chemicals, Ventullo typically pumps groundwater from the earth or retrieves soil samples as deep as 60 feet. He then "manipulates" them in his laboratory "by adding or not adding nutrients and measuring the growth of bacteria. We also measure the ability of these soils to degrade chemicals."

Ventullo's research has taken him from the banks of the Little Miami River in Dayton to the University of Waterloo in Canada.

His work has been published in such journals as Environmental Toxicology and Chemistry and Applied and Environmental Microbiology. His most recent paper was published in Microbial Ecology.

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For media interviews, contact Roy M. Ventullo at (513) 229-2503.