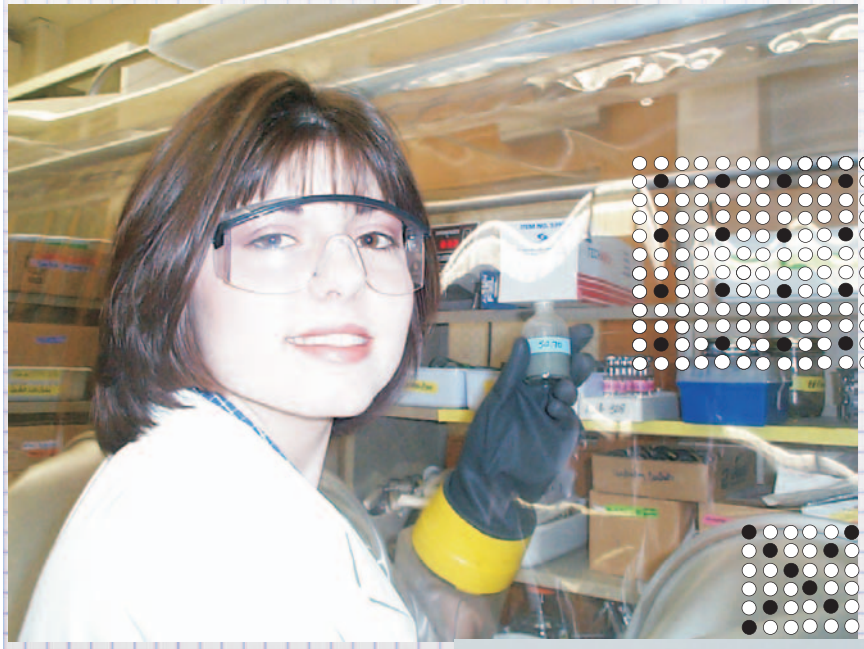
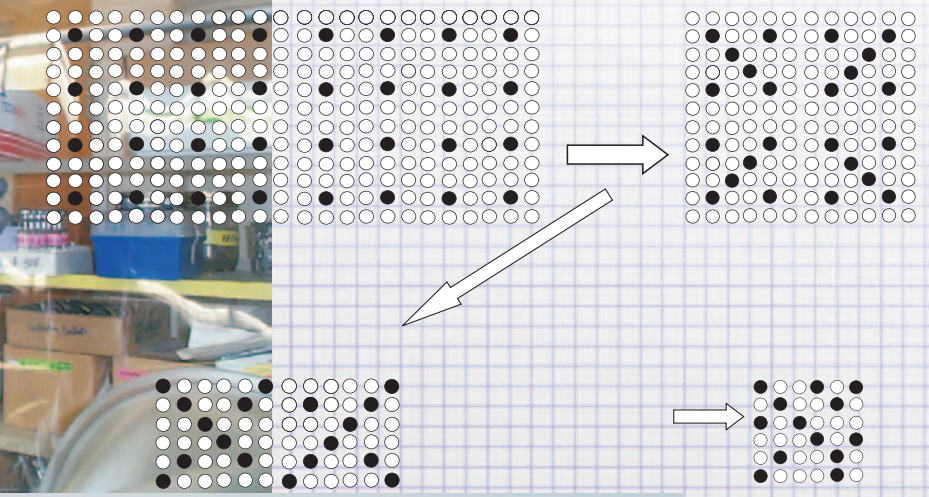
EPA United States Environmental Protection Agency

Monitored Natural Attenuation of MTBE as a Risk Management Option at Leaking Underground Storage Tank Sites





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Monitored Natural Attenuation of MTBE as a Risk Management Option at Leaking Underground Storage Tank Sites

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Notice

The U.S. Environmental Protection Agency through its Office of Research and Development funded the research described here. It has been subjected to the Agency's peer and administrative review and has been approved for publication as an EPA document. Mention of trade names and commercial products does not constitute endorsement or recommendation for use.

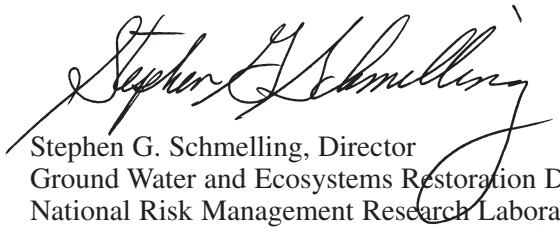
All research projects making conclusions and recommendations based on environmentally related measurements and funded by the U.S. Environmental Protection Agency are required to participate in the Agency Quality Assurance Program. This project was conducted under two Quality Assurance Project Plans. Work performed by U.S. EPA employees or by the U.S. EPA on-site analytical contractor followed procedures specified in these plans without exception. Information on the plans and documentation of the quality assurance activities and results is available from John Wilson or Cherri Adair.

Foreword

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA's research program is providing data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The National Risk Management Research Laboratory (NRMRL) is the Agency's center for investigation of technological and management approaches for preventing and reducing risks from pollution that threatens human health and the environment. The focus of the Laboratory's research program is on methods and their cost-effectiveness for prevention and control of pollution to air, land, water, and subsurface resources; protection of water quality in public water systems; remediation of contaminated sites, sediments and ground water; prevention and control of indoor air pollution; and restoration of ecosystems. NRMRL collaborates with both public and private sector partners to foster technologies that reduce the cost of compliance and to anticipate emerging problems. NRMRL's research provides solutions to environmental problems by: developing and promoting technologies that protect and improve the environment; advancing scientific and engineering information to support regulatory and policy decisions; and providing the technical support and information transfer to ensure implementation of environmental regulations and strategies at the national, state, and community levels.

In the United States of America, the responsibility for managing spills of gasoline from underground storage tanks falls to the individual states. Where it has been appropriate, many states have selected monitored natural attenuation as a remedy for organic contaminants in ground water. Many states also use a formal process of risk management to select the most appropriate remedy at gasoline spill sites. Both monitored natural attenuation (MNA) and risk management require an understanding of the environmental processes that control the behavior of a contaminant in ground water. This report is intended for technical staff in the state agencies with responsibility for administering the underground storage tank program as mandated by RCRA. The information is intended to allow the state regulators to determine whether they have adequate information to evaluate MNA of fuel oxygenates at a site, and to allow the regulators to separate sites where MNA of fuel oxygenates may be an appropriate risk management alternative from sites where MNA is not appropriate.



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Abstract

This report reviews the current state of knowledge on the transport and fate of MTBE in ground water, with emphasis on the natural processes that can be used to manage the risk associated with MTBE in ground water or that contribute to natural attenuation of MTBE as a remedy. It provides recommendations on the site characterization data that are necessary to manage risk or to evaluate monitored natural attenuation (MNA) of MTBE, and it illustrates procedures that can be used to work up data to evaluate risk or assess MNA at a specific site.

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