United States Environmental Protection Agency
Research and Development (481)
Solid Waste and Emergency Response (5102G)
EPA542-F-97-013
November 1997

EPA

In Situ Flushing Action Team

RTDF

Remediation Technologies Development Forum

RTDF Action Teams

Lasagna™ Partnership

Bioremediation Consortium

Permeable Reactive Barriers Action Team

IINERT Soil-Metals Action Team

Sediments Remediation Action Team

Phytoremediation of Organics Action Team

What Is the In Situ *Flushing Action Team?*

The *In Situ* Flushing Action Team, established in 1997, is one of seven Action Teams under the Remediation Technologies Development Forum (RTDF). The U.S. Environmental Protection Agency (EPA) created the RTDF in 1992 to foster collaboration between the public and private sectors in developing innovative solutions to mutual hazardous waste problems. The *In Situ* Flushing Action Team includes representatives from industry, government, and academia who share an interest in facilitating the development, evaluation, and potential implementation of chemically enhanced contaminant extraction methodologies for subsurface remediation.

What Are In Situ *Flushing Technologies?*

In situ flushing technologies reduce ground-water contaminant concentrations by injecting an aqueous solution containing chemical adjuvants (*e.g.*, surfactants and cosolvents) into highly contaminated source zones. Subsurface contaminants are solubilized and/or mobilized by the injected flushing solution and then extracted via downgradient extraction wells for above-ground treatment. Advantages of *in situ* flushing include:

- Does not require excavation, handling, or transport of large quantities of contaminated soils
- Is potentially applicable to a wide range of contaminants in both vadose and saturated zones
- Accelerates site remediation and achievement of cleanup goals
- Is specifically designed for source zone remediation

What Is the Action Team's Mission?

The Action Team's mission is to facilitate the development, evaluation, and implementation of *in situ* flushing technologies for source remediation.

What Action Items Has the Team Identified?

The action items identified by this RTDF group are tied together under one "umbrella" project involving the conceptual design of a large-scale *in situ* flushing study. Action items are to:

- Further develop technical practices and produce a general protocol
- Perform economic evaluations and compare the costs of *in situ* technologies with those of conventional treatments
- Develop adjuvant recovery and reuse systems
- Analyze endpoint issues and define success criteria by answering "How clean is clean?"

The Action Team is in the process of forming work groups to investigate the above-listed action areas. Other action items identified by the *In Situ* Action Team include:

Dissemination of information to regulators and site managers to increase their confidence in using this technology and to eliminate misconceptions

Identification of applicable test sites for future studies and improvement of nonaqueous phase liquid (NAPL) source identification techniques

Analysis of this technology's potential niche in the market (evaluate who is going to need this product, determine how many sites will have conditions that are conducive to this technology, and establish the status of competing technologies)

Identification of funding sources for further development of technology

Assessment of the benefits of partial mass removal and the use of other processes, such as natural attenuation or bioremediation, to achieve cleanup levels after the *in situ* flushing has been performed

What Organizations Are Represented on the Action Team?

U.S. Environmental Protection Agency
U.S Department of Energy
U.S. Air Force
Naval Facilities Engineering Service Center

DuPont
Witco Corporation
Institute of Gas Technology

Clemson University
Colorado State University
CSIRO (Australia)
University of Florida
University of Michigan
University of Oklahoma
Rice University
University of Texas

RTDF

Remediation Technologies Development Forum

Would You Like More Information?

For more information on the *In Situ* Flushing Action Team, please contact:

Lynn Wood, Ph. D.
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
P.O. Box 1198
Ada, OK 74820
Tel: 405-436-8552 Fax: 405-436-8703
E-mail: wood.lynn@epamail.epa.gov

Stephen Shoemaker
DuPont Corporate Remediation
140 Cypress Station Drive, Suite 135
Houston, TX 77090
Tel: 281-586-2513 Fax: 281-586-5650
E-mail: stephen.h.shoemaker@usa.dupont.com

For more information on the RTDF or other Action Teams, please visit the RTDF World Wide Web site at www.rtdf.org or contact:

Robert Olexsey
U.S. Environmental Protection Agency
26 West Martin Luther King Drive
Cincinnati, OH 05268
Tel: 513-569-7861
E-mail: olexsey.bob@epamail.epa.gov

Walter Kovalick, Jr., Ph.D.
U.S. Environmental Protection Agency
401 M Street, SW
(51026)
Washington, DC 24060
Tel: 703-603-9910
E-mail: kovalick.walter@epamail.epa.gov

To request other RTDF fact sheets, please write/fax to:

EPA/NCEPI
11305 Reed Hartman Highway, Suite 219
Cincinnati, OH 45241
Fax: 513-489-8695

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