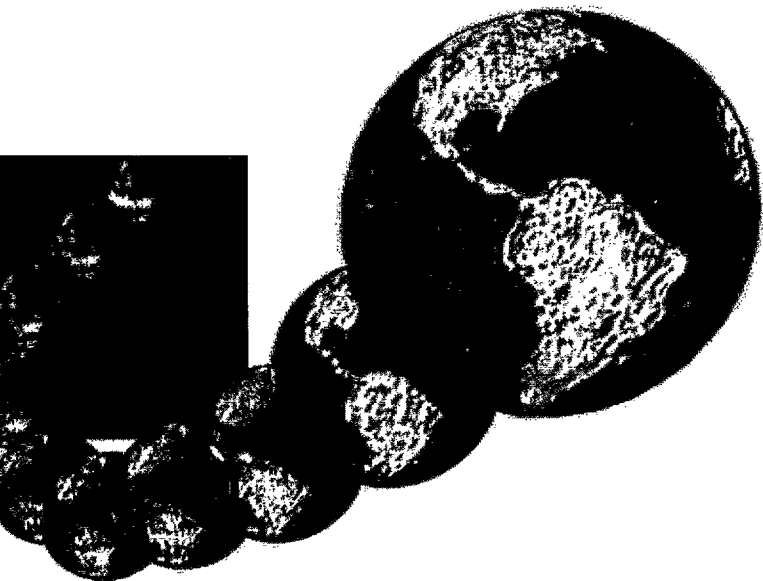




# Emerging Technology Program



The U.S. Environmental Protection Agency (EPA) Superfund Innovative Technology Evaluation (SITE) Program encourages the development of innovative technologies for faster, more effective, and less costly treatment of hazardous waste. Through the SITE Program, EPA evaluates technologies in conjunction with technology developers to determine each innovative technology's effectiveness in meeting performance and cost objectives.

The SITE Program consists of the following four evaluation components: (1) the Emerging Technology Program (ETP), (2) the Demonstration Program, (3) the Monitoring and Measurement Technologies Program, and (4) Technology Transfer. This brochure provides information about the SITE ETP.

## WHAT IS ETP?

SITE ETP is EPA's first program to provide direct technical and financial assistance to innovative remediation technology developers. This is accomplished through cooperative agreements with each developer.

Over 70 innovative treatment technologies have been or are being supported by the ETP. Since its inception in 1987, the ETP has provided a total of \$16.6 million to private sector and university groups for research and development of innovative technologies. Other federal agencies, primarily the Department of Energy (DOE) and the Department of Defense (DoD), have also given critical technical and financial support.

## Inside

### The SITE Emerging Technology Program

#### What is ETP?

#### Selecting Technologies for ETP

#### Results of ETP

#### Added Value of ETP

#### Partnerships That Work

#### The Future of ETP

#### Technology Transfer

## FOSTERING TECHNOLOGY DEVELOPMENT FOR ECONOMIC GROWTH

"We must...focus our efforts on the new opportunities before us, recognizing that government can play a key role helping private firms develop and profit from innovations. We must move in a new direction:

- Strengthening America's industrial competitiveness and creating jobs;
- Creating a business environment where technical innovation can flourish and where investment is attracted to new ideas;
- Ensuring the coordinated management of technology all across the government;
- Forging a closer working partnership among industry, federal and state governments, workers, and universities;
- Redirecting the focus of our national efforts toward technologies critical to today's businesses and a growing economy, such as information and communication, flexible manufacturing, and environmental technologies; and,
- Reaffirming our commitment to basic science, the foundation on which all technical progress is ultimately built."

Technology for America's Economic Growth, A New Direction to Build Economic Strength  
(Vice President Al Gore, Feb. 22, 1993)



## Leading in EPA's New Initiatives

The SITE ETP has brought government and the private sector together to foster and accelerate research and development of innovative technologies. ETP's goals parallel the new EPA-led, multiyear Environmental Technology Initiative (ETI) Program, which implements the President's technology policy. ETP's goals include the following:

### Fostering government and private partnerships to promote innovative technologies

*Currently, 72 cooperative agreements are in effect between the ETP and the private sector.*

### Encouraging collaborative efforts between government agencies such as EPA, DOE, and DoD

*DOE has co-funded 21 ETP technology development projects; DoD has co-funded 8 ETP projects.*

### Supporting and encouraging the development of innovative technologies for commercialization

*ETP has completed 42 technology development projects; most of these technologies are now being demonstrated or commercialized.*

### Stimulating the economic growth of small businesses in the environmental field

*Approximately 97 percent of developers in the ETP are small businesses.*

## ETP's Role in Technology Development

EPA supports all stages of technology development. The SITE Program provides opportunities to develop innovative treatment technologies and to move these technologies into field demonstration and commercialization. The ETP provides a firm foundation for collecting data on innovative technologies at bench- or pilot-scale level of development and supports innovative technology developers by doing the following:

- Entering into cooperative agreements with developers for technical and financial assistance
- Providing access to national and international scientific and engineering information resources
- Promoting technologies for field demonstration
- Encouraging technologies with potential to move into the commercial marketplace

## SELECTING TECHNOLOGIES FOR ETP

Each year, the ETP issues a Request for Preproposals (RFP) to interested technology developers. The preproposals describe the technology and outline plans for its research, development, and commercialization. Technical reviewers evaluate the preproposals based on criteria that include the quality of the data and the results to date, the value of the technology to Superfund and other cleanup activities, and the potential to commercialize the technology.

Selected developers are then invited to submit detailed Cooperative Agreement Applications. This cost-sharing vehicle allows EPA to enter into jointly funded projects with each developer. The ETP requires each applicant to share the cost of conducting and evaluating the project by providing a

minimum of 5 percent of the overall project cost. After evaluating the applications, EPA awards up to \$300,000 (\$150,000 per year for 2 years) to successful applicants.

At the end of the first year, EPA reviews each project to determine whether the progress made warrants funding for the second year. At the completion of each project, the technology's performance is documented in a final report and journal articles, as well as in EPA's Emerging Technology Summary and Bulletin.

---

*"The funding from the Emerging Technology Program will allow our firm to evaluate our technology in a pilot/field environment and generate the required data to move it along to the demonstration phase. The commercialization and demonstration of this technology would have significant international impact which is verified by the preliminary interest we have received at this early stage of project development."*

*Lewis Environmental Services  
ETP Participant*

---

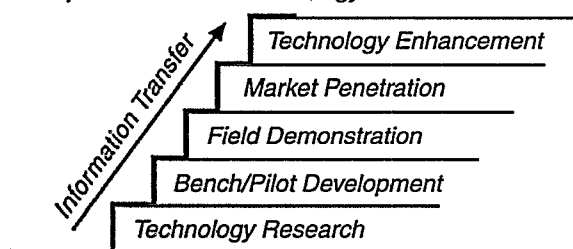
## Growth Provides Opportunities

The SITE ETP has grown substantially since its beginning in 1987. The program has funded an average of 10 projects per year out of approximately 840 preproposals. ETP has to date received about 3,800 requests for RFPs.

This high interest from the private sector illustrates that a great number of developers are active in research and development and that these developers need the type of financial support and technical assistance provided by the ETP.

The continued growth of the program is important to provide opportunities for technology developers, as well as those responsible for site cleanup who must meet increasingly stringent cleanup standards.

### Steps to Innovative Technology Commercialization



## RESULTS OF ETP

To date, 42 of the 72 projects in the ETP have been completed. A wide variety of treatment categories have been represented in the program. The chart to the right provides a breakdown of the completed or ongoing ETP projects by treatment category.

Developers involved in the ETP confirm that the program has benefited research, development, and commercialization of their technologies. Responses to a 1994 request for information indicated the following results from ETP participants.

- 40 percent published one to five journal articles; 18 percent published six or more
- 36 percent have been accepted into the SITE Demonstration Program
- 60 percent commercialized their technologies
- 22 percent acquired one to three clients

### SITE ETP Emerges in a Global Market

Because the need for better treatment technologies continues to grow throughout the world, the ETP is rapidly expanding into the international cleanup community. Of the developers responding to the 1994 request for information, 65 percent had participated in dialogues regarding their respective technologies with at least one foreign country. In total, 30 countries have participated in international dialogues with these ETP participants.

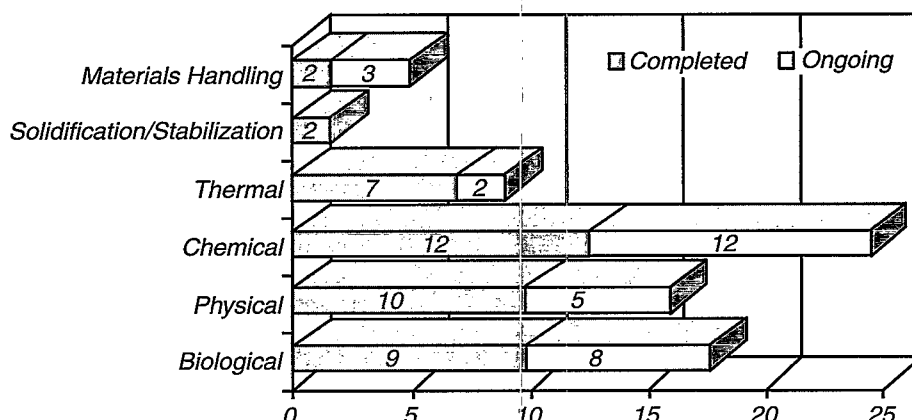
### ADDED VALUE OF ETP

When innovative technologies enter the ETP, all parties involved in hazardous waste cleanup activities benefit. The ETP provides value at all levels—from innovative research and development to implementation and market commercialization.

#### Technology Developers

- Funding for research and development
- Better understanding of issues facing the national and international cleanup community
- Visibility in the cleanup community
- Recognition through the program's scientific credibility
- Technical support and technology transfer

ETP Projects by Treatment Category



### Scientific Community

- Stimulus to focus on safer, faster, more effective, and less costly treatment technologies
- Centralization and dissemination of evaluation data
- Exposure to and awareness of innovative technologies
- Documentation of credible performance data

### National and International Markets

- Education and technology transfer of new, more efficient, and cost-effective innovative technologies
- Encouragement for private sector funding to further meet the need for better remediation technologies

### EPA and Other Federal Agencies

- Support for remediation activities
- Model for private sector funding and technical support
- Technology transfer through participation in selection and testing of innovative technologies

*"At a time when other federal agencies are striving to become world leaders in the development of environmental technology, they could learn a lot from EPA's SITE demonstration and ETP programs. The centralization and extensive information dissemination efforts of [both programs] make them leaders in environmental transfer."*

*International Technology Corporation  
ETP Participant (4 Projects)*

### PARTNERSHIPS THAT WORK

The ETP's growth has been enhanced by the participation of and funding from other federal agencies. DOE has funded 21 projects in the program since 1990, and DoD has funded 8 projects. Both agencies are interested in using innovative technologies at DOE and DoD sites requiring remediation. This interest has led to the following:

- Co-funding of ETP projects
- Joint review and selection of innovative technologies
- Availability of DOE and DoD sites for field development of emerging technologies

### THE FUTURE OF ETP

The ETP's future will include furthering the amount of technical and financial assistance to innovative technology developers, while capitalizing on limited resources through interagency partnering. The ETP can expand its impact by doing the following:

- Increasing the private sector's interest in innovative technology development
- Attracting a variety of innovative technologies for research and development
- Moving forward a greater number of field development projects
- Supplying technologies to the SITE Demonstration Program and the commercial market

## **TECHNOLOGY TRANSFER**

At the completion of each ETP project, the technology's performance is documented in a final report and journal articles as well as in EPA's Emerging Technology Summary and Bulletin. In addition, every technology in the SITE Program is included in EPA's annual Technology Profiles document.

To order technical documents write, call, or fax:

U.S. Environmental Protection Agency  
Center for Environmental Research Information (CERI)  
26 West Martin Luther King Drive (G72)  
Cincinnati, OH 45268  
(513) 569-7562  
Fax (513) 569-7566

Electronic access to information on the SITE Program and on innovative technologies is available through the following sources:

Alternative Treatment Technology Information Center (ATTIC)  
System Operator: (301) 670-6294  
System Access (2400 baud): (301) 670-3808  
System Access (9600 baud): (301) 670-3813

Clean-Up Information Bulletin Board System (CLU-IN)  
System Operator: (301) 589-8368  
System Access: (301) 589-8366

Vendor Information System for Innovative Treatment Technologies  
VISITT Hotline: (800) 245-4505

For additional information on the Emerging Technology Program (ETP) contact:

Norma Lewis  
Risk Reduction Engineering Laboratory  
U.S. Environmental Protection Agency  
26 West Martin Luther King Drive  
Cincinnati, OH 45268  
Phone: (513) 569-7665 Fax: (513) 569-7620

United States  
Environmental Protection Agency  
Center for Environmental Research Information  
Cincinnati, OH 45268

Official Business  
Penalty for Private Use  
\$300

EPA/540/F-95/502

BULK RATE  
POSTAGE & FEES PAID  
EPA  
PERMIT No. G-35