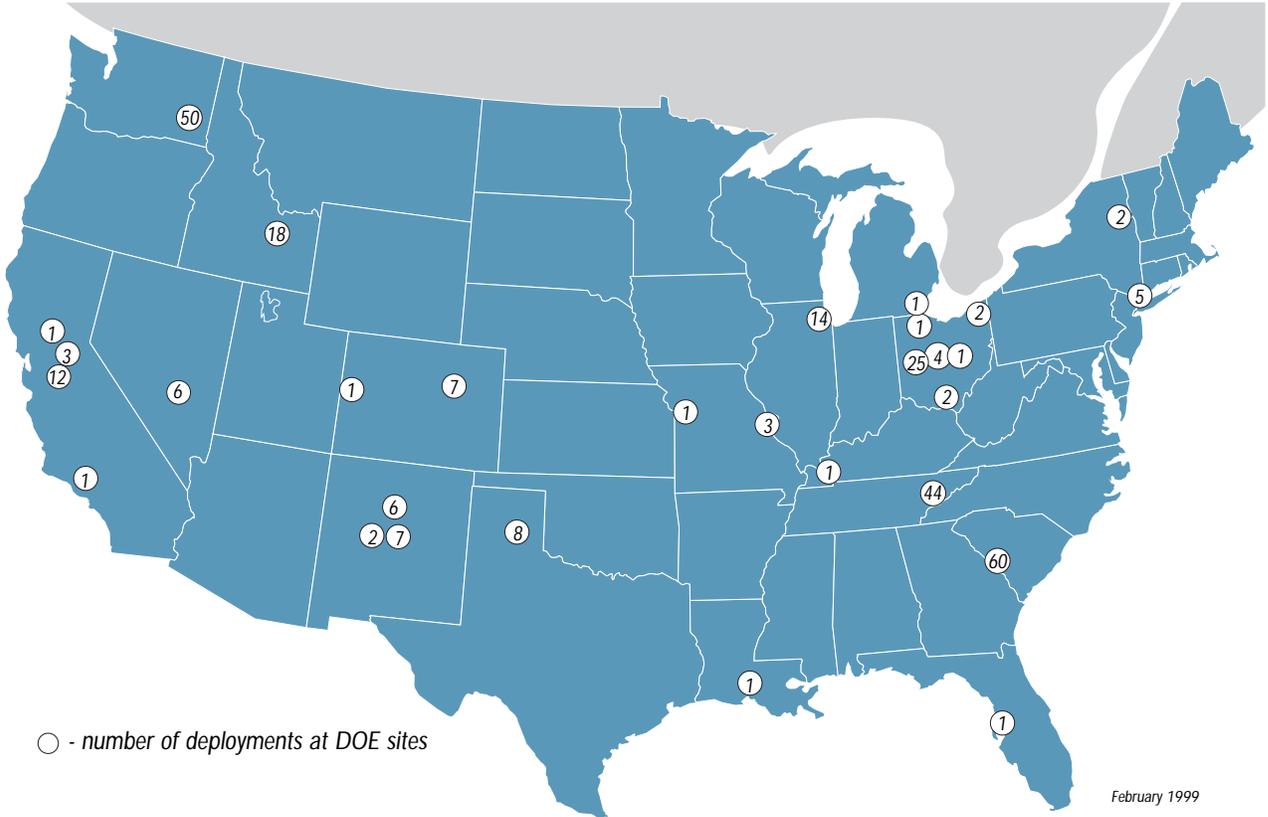
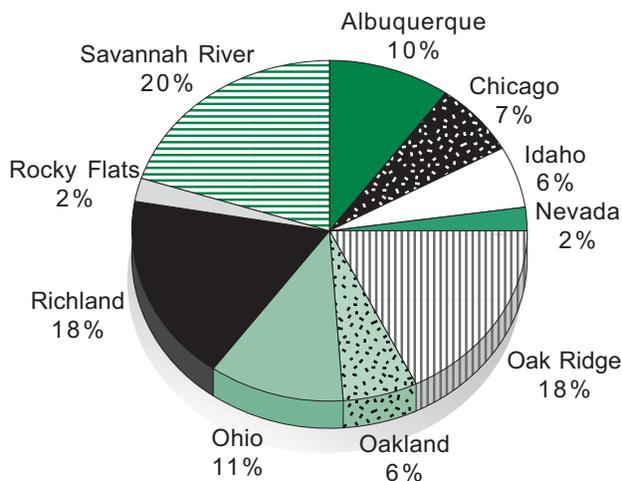


1.1 EM's R&D INVESTMENTS ARE PAYING OFF IN CLEANUP AS TECHNOLOGIES ARE DEPLOYED AT DOE SITES

EM's Office of Science and Technology (OST) manages and directs programs for the development of new and improved environmental technologies in support of the EM cleanup mission. OST technologies are being used to clean up DOE sites across the country. From FY91 through FY98, almost 300 deployments of OST technologies took place at 30 DOE sites across the country.



Deployments by DOE Field Office
FY91 - FY98



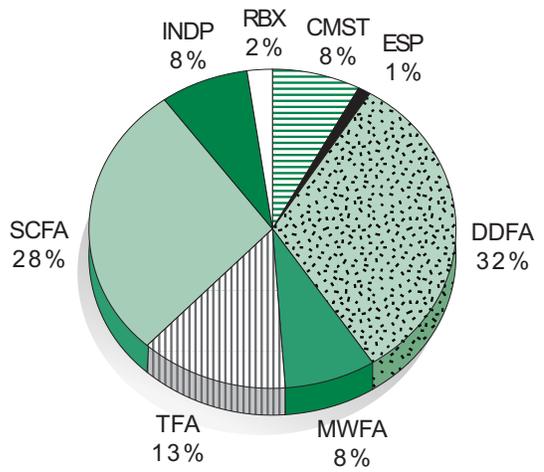
OST technologies are being deployed across the DOE complex by all Field Offices. These deployments provide one indication that OST's efforts toward supporting EM's cleanup mission are paying off.

**Deployments by Focus Area/Crosscutting Program
FY91 - FY98**

The Focus Areas address the diversity of problems facing EM:

- mixed/low level/TRU waste (Mixed Waste Focus Area);
- high level waste (Tanks Focus Area);
- environmental restoration (Subsurface Contaminants Focus Area); and
- deactivation/decommissioning of facilities (Deactivation and Decommissioning Focus Area)

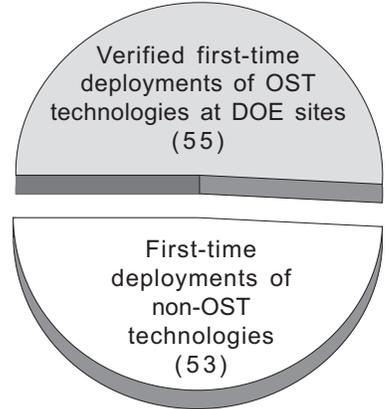
All Focus Areas have contributed technologies deployed to address EM problem areas. The Subsurface Contaminants and the Deactivation and Decommissioning Focus Areas have a proportionately higher number of deployments, largely due to the widespread nature and the magnitude of those problem areas across the complex.



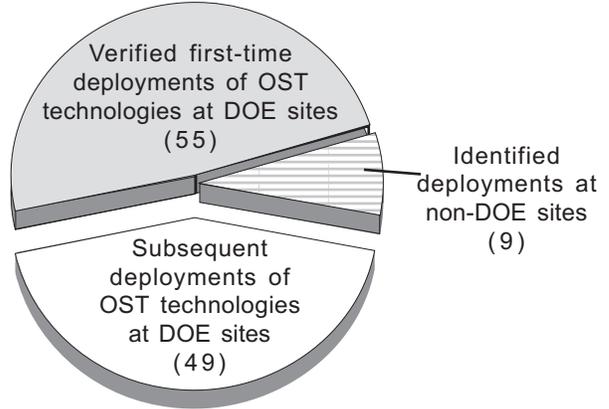
- Legend:**
- CMST – Characterization, Monitoring, and Sensor Technology Crosscutting Program
 - ESP – Efficient Separations and Processing Crosscutting Program
 - DDFA – Deactivation and Decommissioning Focus Area
 - MWFA – Mixed Waste Focus Area
 - TFA – Tanks Focus Area
 - SCFA – Subsurface Contaminants Focus Area
 - INDP – Industry Programs
 - RBX – Robotics Crosscutting Program

FY98 Technology Deployments

For FY98, EM committed to 49 first-time deployments of innovative technologies at DOE sites. This goal has been far exceeded and OST has played a major role in that success. The field has reported 122 such deployments: 53 of non-OST technologies and 69 of OST-developed technologies. OST has conducted an intensive review of claims regarding its technologies. To date, OST has verified 55 first-time DOE-site deployments, which together with the 53 non-OST technology deployments makes a total of at least 108 first-time DOE-site deployments in FY98. Considering only OST technologies, in addition to the 55 first-time DOE-site deployments, OST has verified 49 subsequent uses at DOE sites and 9 non-DOE site deployments, for a total of 113 deployments in FY98.



108 First-Time Deployments of Technologies at DOE Sites in FY98 (vs. a target of 49)



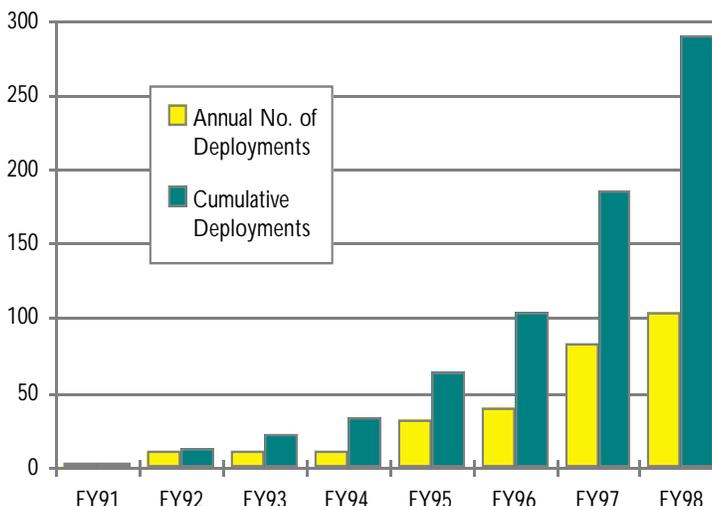
113 Verified Deployments of OST Technologies in FY98

1.2 THE RATE OF TECHNOLOGY DEPLOYMENTS IS ACCELERATING AS OST'S PROGRAM MATURES AND EM CLEANUP PROGRESSES

Cumulative Totals of OST Technology Deployments at DOE Sites by Fiscal Year

EM is accelerating the use of new technology. OST technology deployments have increased from FY91 to FY98 as:

- New technologies move from R&D phases to field readiness
- Existing technologies are proven effective in waste cleanup
- Management tools are implemented to facilitate integration of site cleanup needs with technologies (Site Specific Deployment Plans, Technology Roadmaps, and Corporate Performance Measures for Deployment)
- Programmatic changes are implemented (increased funding to industry and expanded Focus Area role to include Technology Deployment Assistance)

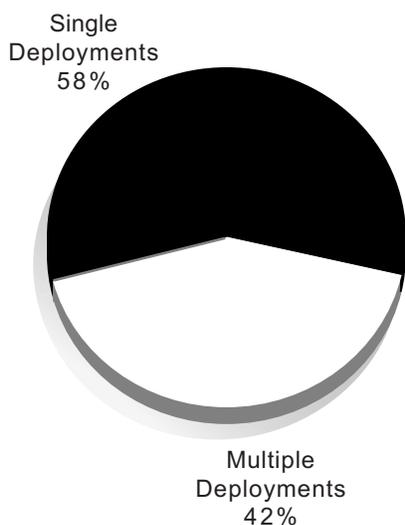


Frequency of Deployments for OST Technologies FY91-FY98

Over the last four years, EM has accelerated the deployment of new, technology. From FY91 to the end of FY98, over 40% of OST's deployed technologies had been used more than once.

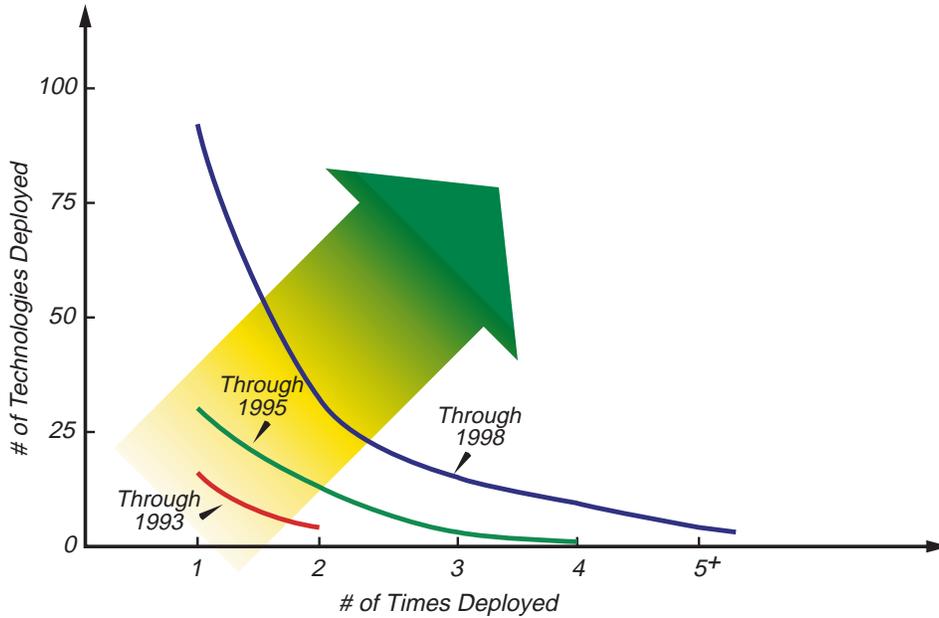
Of the technologies with multiple deployments, 52% have been deployed 3 or more times.

The following OST technologies have achieved widespread use at DOE sites:



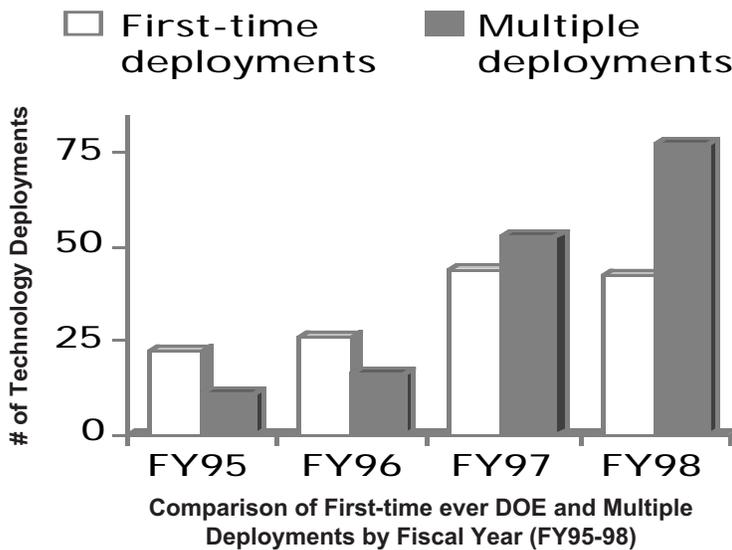
- Borehole Miner [OST Reference #1499]
- Directional Drilling [#650]
- Gamma Cam™ Radiation Imaging System [#1840]
- In Situ Permeable Flow Sensor [#99]
- Oxy-Gasoline Torch [#1847]
- Pipe Explorer™ System [#74]
- Reactor Surface Contamination Stabilization [#1839]
- Stabilized Contaminants using Envirocure Polymer Macroencapsulation [#30]
- Surface Contamination Monitor and Survey Information Management System (SCM/SIMS) [#1942]

Accelerated Technology Deployment Will Achieve Goals of *Paths to Closure*



The technology deployment trend is positive for EM. More OST technologies are being deployed each year, and an increasing number of technologies are being deployed multiple times. This increase is contributing to the schedule acceleration and cost reduction goals published in EM's *Accelerating Cleanup: Paths to Closure* document.

Multiple Deployments of OST Technologies Are Rapidly Increasing



Number of Times Deployed	Number of Technologies
1	97
2	22
3	15
4	6
5	3
6	0
7	1
8	1
9	1
≥ 10	3

Frequency of OST Technology Deployments, Cumulative for FY95-98

1.3 OST TECHNOLOGIES ARE ALSO CONTRIBUTING TO CLEANUP EFFORTS AT NON-DOE SITES

While many of EM's cleanup issues are unique to DOE, there are some common problems shared with other federal agencies and organizations. Since the inception of the program in 1989, EM has had an active outreach to other federal agencies with research and development activities targeted toward environmental cleanup. In a number of cases, DOE has jointly funded the development and deployment of technologies with other federal agencies where both agencies benefit.

To date, 32 deployments of OST-developed technologies have occurred at 28 non-DOE sites across the country and abroad. These sites include numerous military installations, Superfund sites, nuclear reactors, and various industrial sites.

