

**Assessment of the Nature and Frequency of EPA's Activities in
Pollution Prevention, End-of-Pipe Treatment, and Remediation:
A Web-based Profile**

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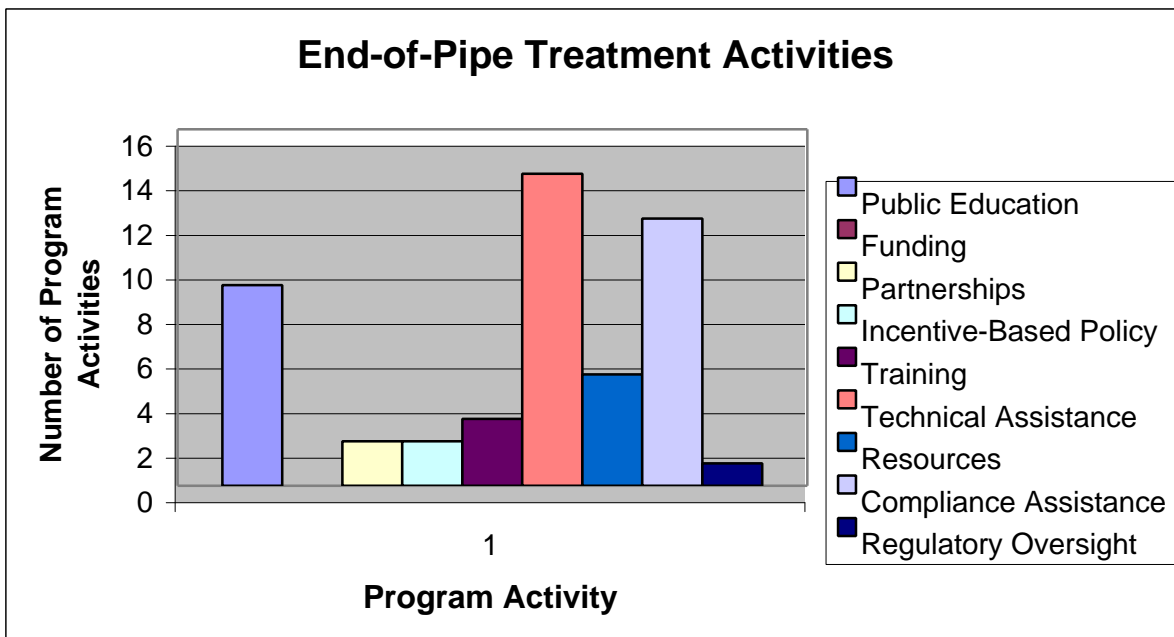
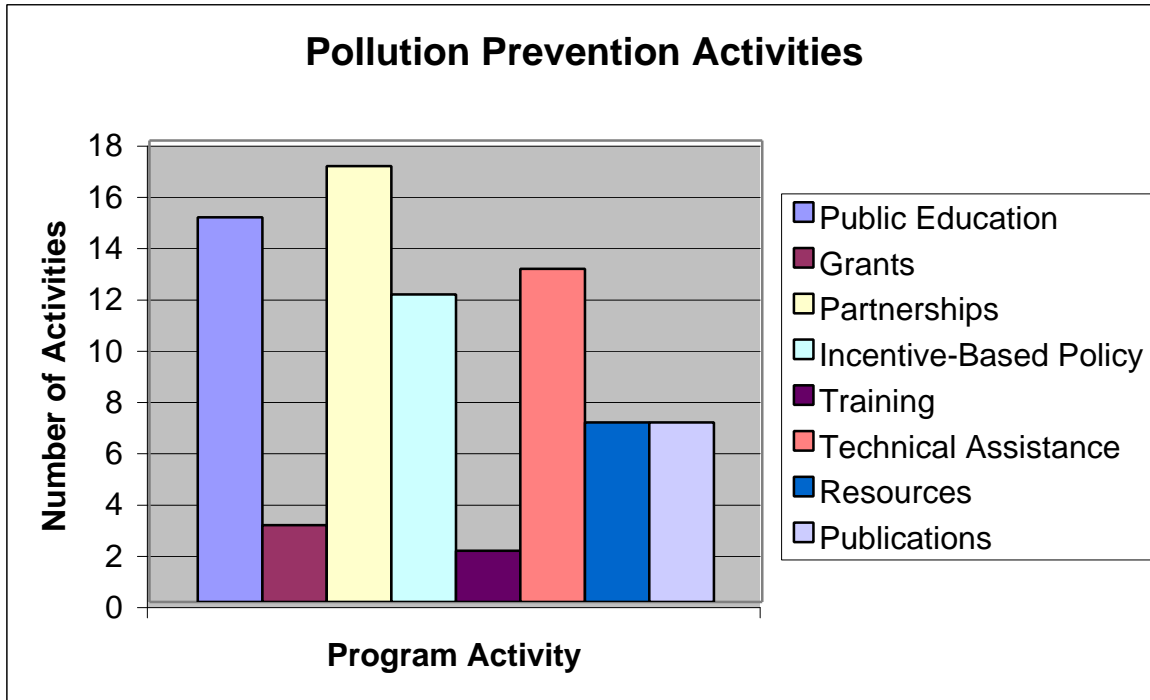
ABSTRACT

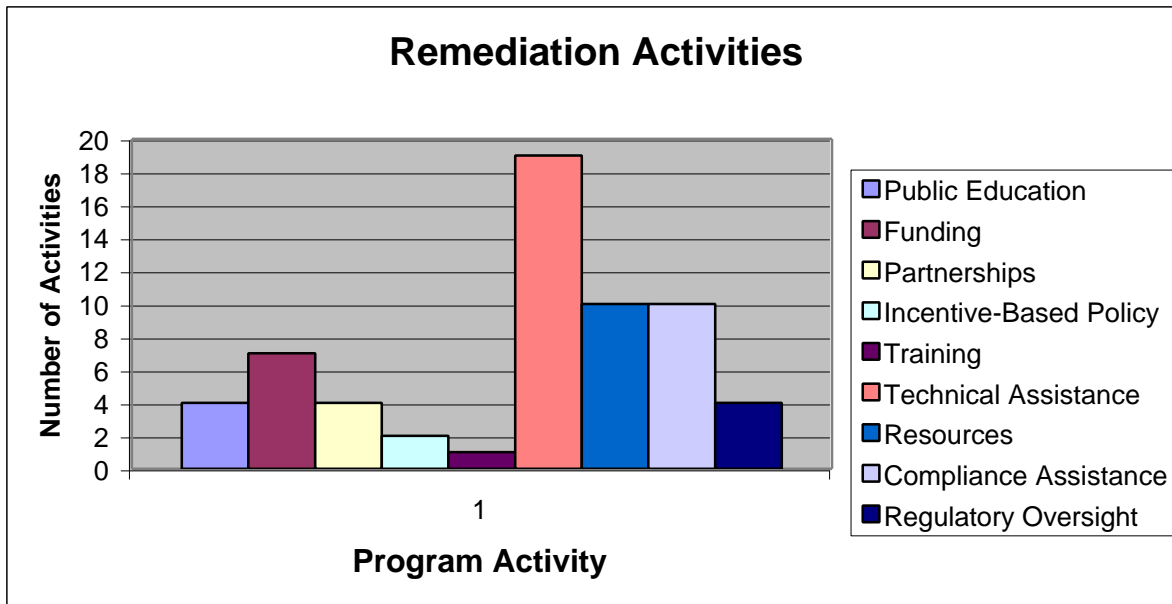
This report consolidates information available on U.S. EPA's website and describes Agency activities in pollution prevention, end-of-pipe treatment, and remediation. The report provides details regarding the frequency and nature of Agency activities in these three areas. Major activities common to the three program areas include public education; financial assistance through trust funds and grants; partnerships, consortia and collaboration; incentive-based policies that encourage voluntary activity and introduce flexibility; regulatory oversight; regulatory compliance assistance; training; technical assistance; resources, such as software and databases; and publications.

Overall, pollution prevention activities appear to be more abundant throughout the Agency than end-of-pipe treatment or remediation activities. However, the pollution prevention activities tend to be less detailed, pursue broader goals, and apply to a more diverse audience than the end-of-pipe treatment and remediation activities. The pollution prevention materials more frequently target broad audiences with varied stakes in pollution prevention. Although the end-of-pipe treatment and remediation activities provide information for the general public, much of the activities focus on waste treatment and remediation professionals, industry and implementing agencies. The following charts provide a rough estimate of the frequency of Agency activities in each category for pollution prevention, end-of-pipe treatment and remediation. The numbers do not provide precise comparisons of the three program areas, given the varying goals and scope of the programs. Rather, the numbers offer a general overview of the quantity of Agency activities. It should be noted that some Agency activities qualified for more than one category. The tally does not, however, reflect the scope or breadth of each activity. Rather, the rest of the report offers more detailed information that characterizes the nature of these activities.

GENERAL FREQUENCY OF EPA ACTIVITIES

The following charts provide a rough summary of the frequency of Agency activities for pollution prevention, end-of-pipe treatment and remediation. The vertical label key in each chart corresponds to categories as one moves from left to right. For example, in the pollution prevention chart, Public Education corresponds to the first bar, Grants corresponds to the second bar, and so on.





POLLUTION PREVENTION INFORMATION

INTRODUCTION

The 1990 Pollution Prevention Act formally established a national policy to prevent or reduce pollution at its source whenever feasible. The Act defines pollution prevention (P2) as “...the use of materials, processes, or practices that reduce the use of hazardous materials, energy, water, or other resources and practices that protect natural resources through conservation or more efficient use” (U.S. EPA 1990). EPA has implemented this policy, and the Agency website provides extensive pollution prevention information to diverse audiences. EPA’s pollution prevention programs target citizens, industry and business interests, and government officials. The Pollution Prevention Policy Framework describes EPA’s pollution prevention (<http://www.epa.gov/opptintr/p2home/p2policy/framework.htm>). The pollution prevention policy identifies prevention as the first choice in all of EPA’s work, and affirms the Agency’s commitment to participating in partnerships with industry, institutions, organizations and government organizations to implement effective pollution prevention initiatives.

Overall, the pollution prevention programs and initiatives rely on industry and government partnerships, voluntary audits, planning assistance, information clearinghouses, hotlines, research, workshops, seminars and training to implement the pollution prevention framework. The pollution prevention programs are primarily voluntary. Although EPA’s Pollution Prevention website (<http://www.epa.gov/opptintr/p2home/>) provides a majority of the information regarding pollution prevention activities, many of the other Agency programs also include pollution prevention components. For example, the Oil Spill Program offers suggestions for preventing oil spills, while the Pesticide Environmental Stewardship Program describes how pesticide users might implement pollution prevention strategies.

The pollution prevention program addresses a variety of waste issues, but targets the following areas: reduction of risks from Persistent, Bioaccumulative and Toxic (PBT) chemicals, encouragement of environmentally preferable purchasing and safe labeling, adoption of pollution prevention strategies in finance and business management, reduction of negative impacts from

industrial processes, and promotion of pollution prevention concepts and practices at state, tribal and local level through grant programs. The following table summarizes EPA’s approach to implementing pollution prevention activities. Examples of program activities are listed for each category. Detailed information regarding specific EPA pollution prevention initiatives follows this section.

Audience	General Policy Approach	Examples of Specific Activities
Citizens (Individuals)	EPA seeks to increase public awareness and provides information that will encourage citizens to implement pollution prevention activities. www.epa.gov/opptintr/p2home/aboutp2/individ.htm	<ul style="list-style-type: none"> • Explains the environmental and economic benefits associated with pollution prevention activities. • Provides tips on how to generally reduce pollution, to conserve water and how to improve energy efficiency. • Information about the carbon dioxide reductions associated with pollution prevention activities can be accessed at www.epa.gov/opptintr/p2home/aboutp2/ghg.htm
Business and Industry	EPA fulfills an oversight role and links interested parties to useful pollution prevention resources. EPA seeks to foster voluntary partnerships, provide incentives for innovation and encourage businesses to incorporate pollution prevention practices into finance and business management. www.epa.gov/opptintr/p2home/assist/business.htm	<ul style="list-style-type: none"> • Highlights the economic benefits associated with pollution prevention, and offers numerous suggestions for pollution prevention activities in the workplace. • Provides links to state pollution prevention programs and Technical Assistance Programs (TAPs). • TAPs provide many free, confidential, nonregulatory services. TAPs offer: voluntary onsite audits, information clearinghouses, planning assistance, hotlines, research, workshops, seminars and training.
State Agencies	EPA encourages state agencies to develop and implement pollution prevention programs. www.epa.gov/opptintr/p2home/aboutp2/state.htm	<ul style="list-style-type: none"> • Describes the benefits of integrating pollution prevention activities into regulatory activities. • Provides links profiles of successful state pollution prevention programs. • Encourages partnerships: Provides a link to the National Pollution Prevention Roundtable Innovation and Integration site.

Health Departments	Encourages health departments to integrate pollution prevention strategies into current public health programs. www.epa.gov/opptintr/p2home/aboutp2/health-d.htm	<ul style="list-style-type: none"> • Explains how pollution prevention approaches are consistent with the pursuit of public health programs. • Explains how health departments can integrate pollution prevention activities into day-to-day activities. • Provides links to non-EPA health-related pollution prevention resources. Topics include assessing pollution prevention opportunities, integrating pollution prevention strategies into current policies, encouraging community involvement, enforcement activities, and in-house activities.
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IMPLEMENTATION OF POLLUTION PREVENTION POLICY

The website describes the 1990 Pollution Prevention Act as the impetus for many of EPA’s pollution prevention programs, and describes the Agency’s progress in implementing the Act. Thus far, EPA has:

- Provided matching funds to state and local pollution prevention programs via the Pollution Prevention Incentives for States (PPIS). The grants facilitate programs that encourage businesses to implement pollution prevention techniques.
- Created a pollution prevention strategy for the EPA. The strategy emphasizes the Agency’s commitment to source reduction, and to collect information about source reduction and recycling activities.
- Established a source reduction clearinghouse. EPA’s Pollution Prevention Information Clearinghouse (PPIC) provides telephone reference and referrals, distributes Agency guidance documents, and maintains a collection of pollution prevention resources available for interlibrary loan.

EPA has employed a variety of methods to implement pollution prevention policy. The major implementation activities include:

- public education
- grants
- incentive-based policies to encourage research and development
- partnerships and collaborations
- technical assistance
- training

The following table summarizes the major programs launched by EPA thus far to facilitate pollution prevention:

P2 Program	PBT Initiative, www.epa.gov/pbt/home.htm
Description	Seeks to reduce risks from and reduce exposure to priority PBT chemicals through increased coordination among national and regional EPA programs. Strategy focuses on cross-media issues associated with PBT pollutants.
Target Audience	Government, citizens, business and industry
Policy Approach and Goals	<p>Policy tools include international, voluntary, regulatory, programmatic, remedial, compliance monitoring and assistance, enforcement, research, and outreach.</p> <ul style="list-style-type: none"> • Develop & implement National Action Plans for Priority PBT Pollutants. Draft plans are available on the web for Mercury and Compounds, Hexachlorobenzene, Alkyl-Lead, Octachlorostyrene, Aldrin/Dieldrin, Chlordane, DDT, Mirex, & Toxaphene. The Action Plans use tools to prevent and reduce releases of these PBTs. • Screen and select more priority PBT pollutants for action. EPA relies on a technical panel to apply selection criteria as well as the Waste Minimization Prioritization Tool. An internal and external panel will provide comments. • Prevent Introduction of New PBTs by proposing criteria to require testing/restrictions on new PBT chemicals; develop rules to control attempts to re-introduce out-of-use PBT chemicals into commerce; develop incentives to encourage development of lower-risk chemicals as alternatives to PBTs; and document how PBT-related screening criteria factor into the approval of new pesticides and re-registration of old pesticides. • Measure progress. EPA expects to rely on direct and indirect measures of progress, such as human health or environmental indicators, chemical release, waste generation or use indicators (such as the Toxic Release Inventory), and program activity measures (such as enforcement and compliance data).
Specific Activities	<ul style="list-style-type: none"> • Software tool – PBT Profiler: A risk screening tool that incorporates pollution prevention principles in the design and development of chemicals. The profiler was beta tested by industry, but peer review is on-going. • Public education: Explains how to find information about chemical releases in individuals’ communities, how to access information about fish consumption advisories, and links to agencies that may explain how to dispose of household products that contain PBTs. Also provides links to state programs related to PBT reduction and prevention. • Business incentives: EPA provides links to the Small Business Innovative Research (SBIR) Program, an Agency program that rewards small, high-tech firms for research and development of cutting-edge technologies. Parties who develop innovative pollution prevention technologies may qualify for the awards.

P2 Program	Business Practice Initiatives: Design for Environment, http://www.epa.gov/opptintr/dfe/
Description	Helps businesses incorporate environmental considerations into the design redesign of products, processes, and technical and management systems.
Target Audience	Businesses
Policy Approach	Voluntary program that seeks to provide incentives to foster design and process modifications to reduce negative environmental impacts, and to establish a partnership between business and EPA.
Specific Activities	<p>DfE partnerships inform businesses in the design or redesign of products and processes that are cleaner, more cost-effective, and safer for workers and the public. The DfE process identifies technologies, products and processes that can perform certain functions within an industry and the related pollution prevention activities; evaluates and compares the risk, performance, and cost tradeoffs of the alternatives; disseminates the information to the regulated community; and encourages and enables use of this information through mechanisms and incentives that institutionalize continuous environmental improvement. The DfE partnerships utilize at least one of the following tools:</p> <ul style="list-style-type: none"> • Cleaner Technologies Substitutes Assessment (CTSA) • Integrated Environmental Management System (IEMS) • Life-Cycle Assessment (LCA) • Formulator Initiative • Best Shop Practices <p>Currently EPA has formed partnerships with the following industry sectors: automotive refinishing, printed wiring board, computer display, garment and textile care, formulator, industrial and institutional laundry, integrated environmental management systems, gravure printing, flexographic printing, lithographic printing, screen printing, and adhesives.</p>
P2 Program	Business Practice Initiatives: Green Chemistry, http://www.epa.gov/opptintr/greenchemistry/index.htm
Description	Program seeks to promote pollution prevention and industrial ecology through a partnership with the chemical industry.
Target Audience	Businesses
Policy Approach	Voluntary program that seeks to provide incentives for businesses to incorporate P2 practices, and to establish a partnership between business and EPA.
Specific Activities	Green Chemistry encourages the design, manufacture, and use of environmentally benign chemical products and processes that prevent pollution and reduce environmental and human health risks. EPA has established collaborations through this program with academia, industry, other government agencies, and non-government organizations to promote the use of chemistry for pollution prevention.

P2 Program	Business Practice Initiatives: Voluntary Standards Network, http://www.epa.gov/opptintr/p2home/programs/voluntary.htm
Description	Program seeks to promote pollution prevention through development of standardized environmental management systems.
Target Audience	Businesses, Government
Policy Approach	Voluntary program that seeks to facilitate adoption of P2 through changes in finance and business management.
Specific Activities	Comprised of over 130 representatives from each agency program office and Region, the Network serves as the principal vehicle for coordinating EPA's input to the U. S. Technical Advisory Group on ISO 14000 and communicating EPA policies on environmental management systems (EMS). Federal government's participation in these standards bodies promotes the development of standards that serve national needs such as environmental, health and safety issues.
P2 Program	Business Practice Initiatives: Environmental Accounting Project, http://www.epa.gov/opptintr/acctg/
Description	Program seeks to incorporate pollution prevention considerations into business management.
Target Audience	Businesses
Policy Approach	Voluntary program that seeks to facilitate adoption of P2 through changes in finance and business management.
Specific Activities	Promotes sound management accounting and capital budgeting practices which better address environmental costs. The website offers many guidance documents, case studies, benchmarking studies, and software tools.

P2 Program	Pollution Prevention Grants, http://www.epa.gov/opptintr/p2home/programs/grants.htm
Description	The Office of Prevention, Pesticides and Toxic Substances administers three grant programs.
Target Audience	States, local communities, tribes, and businesses
Policy Approach	Promote P2 concepts and practices at the state, tribal, and local level.
Specific Activities	<ul style="list-style-type: none"> • Pollution Prevention Incentives for States (PPIS): EPA provides about \$5 million annually through PPIS to help develop and sustain state P2 program activities and pioneer new P2 approaches in the states. PPIS grants have also been awarded to tribes. • Environmental Justice through Pollution Prevention (EJP2): As of the end of 1997, EPA issued more than \$10 million to help dozens of community-based groups across the nation develop collaborative approaches to achieve environmental justice through pollution prevention. • Pollution Prevention Information Network: EPA initiated this grant competition in 1997 to promote sharing of P2 information, training and technical assistance expertise among states.

P2 Program	Pollution Prevention Information Clearinghouse (PPIC), http://www.epa.gov/opptintr/library/libppic.htm
Description	PPIC, a free, nonregulatory service, provides P2 information to citizens, industry, and all levels of government.
Target Audience	Citizens, Government, Businesses
Policy Approach	PPIC seeks to reduce or eliminate industrial pollutants through technology transfer, education and public awareness.
Specific Activities	PPIC's documents are organized into the following categories: general pollution prevention information and policy, business practices and sector information, compliance assistance, green purchasing and labeling, toxics in the environment, and design for the environment. PPIC also tracks information regarding pollution prevention related conferences, workshops, and training.
P2 Program	EnviroSense, http://www.epa.gov/envirosense/
Description	EnviroSense provides a single repository for pollution prevention, compliance assurance, and enforcement information and databases.
Target Audience	Primarily industry and state government, but also citizens and federal government.
Policy Approach	Increase public education and foster P2 innovations and developments through consolidation of technical resources. Also facilitates information sharing and collaboration.

<p>Specific Activities</p>	<p>National Pollution Prevention Roundtable (NPPR): The largest membership organization in the country devoted solely to P2, it provides a national forum for promoting the development, implementation, and evaluation of efforts to avoid, eliminate, or reduce pollution at the source. The Roundtable holds national meetings that facilitate pollution prevention network building and the exchange of ideas, resources and research on various topics. The Roundtable has four topic specific electronic listservers, NPPR (P2 Policy), P2 Tech, P2 Trainer and P2 Energy, which serve as forums for sharing P2 information.</p> <p>US Federal Agency Pollution Prevention and Compliance Assistance Internet Cooperative: Joint initiative between EPA and NPPR designed to serve as an index, a locator and one-stop source for P2 information currently available across the country. It is an area on Enviro\$en\$e that is devoted exclusively to supporting communication and exchange of information from regional, state, local, and business assistance websites.</p> <p>National P2 Vendor Database: a repository of more than 400 listings of pollution prevention equipment, products, or services.</p> <p>EPA Sector Notebooks: EPA's Office of Compliance has developed a series of profiles or notebooks containing information on selected major industries. These notebooks, which focus on key indicators that holistically present air, water, and land pollutant release data, describe pollution prevention techniques for each industry.</p> <p>Integrated Solvent Substitution Data System: has been developed to access solvent alternative information through a single, easy to use command structure.</p> <p>Joint Service Pollution Prevention (P2) Library: the single comprehensive resource for information on equipment, technologies, and management practices that reduce or eliminate the generation, disposal, and release of pollutants at joint service installations. The P2 Technical Library provides lessons learned and success stories throughout the joint services, and is useful for researching pollution prevention opportunities during P2 plan development and other projects.</p> <p>Partners for the Environment: This refers to an array of partnership programs. EPA is building cooperative partnerships with a variety of groups, including small and large businesses, citizen groups, state and local governments, universities, and trade associations. These partnerships demonstrate that voluntary goals can achieve environmental results such as pollution prevention.</p> <p>Technical Resources: Technical/Research and Development Information P2 Case Studies, P2 Fact Sheets, Search Consolidated P2 Bibliographic Collections, Economic (Capital Finance) Information, P2 Industry or Process-Specific, P2 Research Development, and Demonstration Materials Exchange, P2 Supplementary Environmental Projects Database.</p>
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In addition, EPA has administered numerous other programs that address pollution prevention concerns. The following table provides a brief description of the pollution prevention activity associated with other programs.

EPA's Program	Program Description
Acid Rain Program	<p>The allowance trading system includes an inherent incentive for utilities to prevent pollution, given that each ton of SO₂ that a utility avoids emitting means one fewer allowance must be retired. Also, EPA uses bonus allowances to reward utilities that implement demand-side energy conservation programs to curtail emissions or install renewable energy generation.</p> <p>http://www.epa.gov/airmarkets/arp/overview.html</p>
Air Programs	<p>The RACT/BACT/LAER Clearinghouse (RBLC) database contains summary information on air pollution emission standards. The data assists State/local agency personnel and private companies in determining what types of controls and pollution prevention measures have been applied to and/or are required for various sources and the effectiveness of these technologies.</p> <p>http://cfpub1.epa.gov/rblc/htm/bl02.cfm</p>
CICA: US-Mexico Border Information Center on Air Pollution	<p>CICA provides technical support and assistance in evaluating air pollution problems along the US-Mexico border. Among other topics, CICA provides technical assistance related to pollution prevention activities.</p> <p>http://www.epa.gov/ttn/catc/cica/</p>
Common Sense Initiative	<p>The Common Sense Initiative was an innovative approach to environmental protection and pollution prevention. The Initiative addressed environmental management by industrial sector rather than by environmental medium. EPA selected six industries to serve as CSI pilots: automobile manufacturing, computer and electronics, iron and steel, metal finishing, petroleum refining, and printing. Six sector subcommittees, each consisting of representatives from industry, environmental justice organizations, labor organizations, environmental organization, federal, state, and local governments, addressed environmental issues facing these industries.</p> <p>The CSI process itself has concluded, but the Agency is continuing sector-based, multi stakeholder work via the Sector Action Plan.</p> <p>www.epa.gov/commonsense/ www.epa.gov/sectors/</p>
Energy Star Program and Green Lights	<p>EPA works with the private sector to develop cutting-edge, voluntary partnerships for the production and use of energy efficient equipment. The energy star program offers businesses and consumers energy efficient solutions.</p> <p>http://www.energystar.gov</p>

Forum on State and Tribal Toxics Action Pollution Prevention Project	<p>This group addresses pressing pollution prevention and toxics related issues, and seeks to improve communication and coordination among states, tribes and EPA.</p> <p>http://www.epa.gov/opptintr/p2home/resources/advisorygroups.htm</p>
Green Products	<p>Promotes environmentally preferable purchasing and safe labeling. The Green Products programs encourage consideration of environmental factors at the consumer level in two ways. EPA encourages consumers to incorporate environmental factors into their normal purchasing process and advocates labeling products according to their impact on the environment.</p> <p>http://www.epa.gov/opptintr/p2home/programs/greenproducts.htm</p>
Green Products: Consumer Labeling Initiative	<p>Examines ways to provide better environmental information on products to consumers. EPA has collaborated with the specialty pesticide industry, environmental groups, and state and local governments to conduct research with consumers, and to learn how to make labels better. Products include household cleaning supplies and pesticides.</p> <p>http://www.epa.gov/opptintr/labeling/</p>
Green Products: Environmentally Preferable Purchasing (EPP)	<p>EPA’s federal-wide program that encourages and assists Executive agencies to purchase environmentally preferable products and services. Website provides background information, guidance documents regarding EPP practices and Federal pilot projects. EPA provides purchasing tools to assist Federal agencies, including: the General EPP Training Tool, Database of Environmental Information for Products and Services, Promising Practices Guide for “Greening” Contracts, Cleaning Product Attributes Ranking Tool, Tips on “Greening” Conferences, and Tips for Buying “green” with the Government Credit Card.</p> <p>http://www.epa.gov/opptintr/epp</p>
Green Products: Product Stewardship	<p>EPA Region 10’s Product Stewardship program is an umbrella under which familiar environmental strategies exist: design for the environment, greening the supply chain, pollution prevention, resource conservation, and take-back. This program encourages all participants in the product life cycle—designers, suppliers, manufacturers, distributors, retailers, users, recyclers, and disposers— to share responsibility for the environmental effects of the products.</p> <p>http://yosemite.epa.gov/r10/owcm.nsf/webpage/Product+Stewardship</p>
Hazardous Waste Combustion	<p>EPA incorporated pollution prevention goals (via source reduction) in the Hazardous Waste Minimization and Combustion Strategy.</p> <p>http://www.epa.gov/epaoswer/hazwaste/combust.htm</p>

Lead Programs	<p>Information on all aspects of the federal lead poisoning prevention program. EPA's lead regulations seek to reduce lead exposure and therefore minimize impact on human health and the environment. The information is primarily technical and targeted at firms that need to conduct lead exposure assessment and lead abatement. General information regarding the hazards of lead exposure is available through the National Lead Information Center.</p> <p>http://www.epa.gov/opptintr/lead/</p>
Mixed Waste	<p>EPA provides information about P2 efforts for mixed, i.e. radioactive and hazardous, waste.</p> <p>http://www.epa.gov/radiation/mixed-waste/</p>
Office of Compliance	<p>This EPA office provides information about the links between pollution prevention and compliance goals, and reviews technologies that minimize waste production and maximize environmental performance.</p> <p>http://es.epa.gov/oeca/main/compasst/compcenters.html</p>
Oil Spill Program	<p>EPA promotes pollution prevention concerns through the Oil Spill Response and Notification program. The Oil Program website includes a section explaining the importance preventing spills. The Oil Pollution Prevention Act of 1990 provides incentives to prevent spills from occurring.</p> <p>http://www.epa.gov/oilspill/prevent.htm</p>
Other PBT Strategies: Hospitals for a Healthy Environment (H2E) Program	<p>The H2E program is a voluntary partnership between EPA, the American Hospital Association (AHA), and AHA members to implement pollution prevention practices in hospitals. H2E seeks to virtually eliminate mercury containing waste from hospital waste streams by 2005, reduce overall waste volumes, and identify additional pollution prevention opportunities.</p> <p>http://www.epa.gov/opptintr/p2home/programs/PBT.htm</p>
Other PBT Strategies: Great Lakes Binational Strategy	<p>EPA helps implement an agreement reached between the US and Canada to achieve certain percentage reductions and/or elimination of designated PBTs in the Great Lakes region.</p> <p>http://www.epa.gov/glnpo/bns</p>
Other PBT Strategies: Virtual Elimination Strategy	<p>EPA Region V's program to "virtually eliminate" PBTs and prevent them from reaching land, air and water.</p> <p>www.epa.gov/reg5oair/glakes/velim.htm</p>
Ozone Layer Protection Program	<p>Contains information about ozone depletion, and regulations in the US designed to protect the ozone layer. The site includes a pollution prevention component by providing information about substitutes for ozone depleting substances.</p> <p>http://www.epa.gov/ozone/index.html</p>

P2 Business Development and Finance Program	<p>Promotes environmental stewardship by assessing a potential role for the financial community. Given the integral role that the finance sector plays in industry, EPA seeks to utilize finance as a means to promote pollution prevention. EPA has compiled guidance documents and case studies to identify pollution prevention opportunities and explore the role of finance institutions in pollution prevention activities.</p> <p>http://www.epa.gov/opptintr/p2home/programs/finance.htm</p>
Pay-As-You-Throw (PAYT) Programs	<p>PAYT programs require residents to pay for solid waste disposal directly based on the amount of waste generated. This provides residents with an incentive to produce less waste. EPA does not directly implement PAYT programs, but supports this approach to solid waste management. The Agency seeks to facilitate community implementation of PAYT. EPA's website provides information and tools to local officials, residents, and others interested in PAYT.</p> <p>http://www.epa.gov/epaoswer/non-hw/payt/index.htm</p>
Pesticide Environmental Stewardship Program (PESP)	<p>Voluntary program that forms partnerships with pesticide users to reduce health and environmental risk and implement pollution prevention strategies. Website provides information about grant programs, such as PESP Project grants. PESP Project grants are administered by the National Foundation for IPM Education (NFIPME) using funding from U.S. EPA's Office of Pesticide Programs. These grants support the overall goal of PESP – to reduce the risks from the use of pesticides in agricultural and non-agricultural settings in the U.S.</p> <p>http://www.epa.gov/opbppd1/PESP/</p>
Pollution Prevention Resources	<p>EPA provides links to national organizations that can provide pollution prevention information for business interests. A link for compliance assistance centers provides information about industry-specific compliance and pollution prevention as well. The guidance documents provide information related to reducing pollution and maximizing environmental performance.</p> <p>http://www.epa.gov/opptintr/p2home/resources/nationalorgs.htm</p>
Project xL	<p>Project XL, which stands for "eXcellence and Leadership," is a national pilot program that allows state and local governments, businesses and federal facilities to develop with EPA innovative strategies to test better or more cost-effective ways of achieving environmental and public health protection. In exchange, EPA will issue regulatory, program, policy, or procedural flexibility to conduct the experiment. Many of the xL projects have focused on pollution prevention achievements.</p> <p>http://www.epa.gov/ProjectXL/</p>
Small Business Technical Assistance	<p>Small business programs and initiatives aim to streamline and coordinate technical assistance from small business development centers. EPA views small businesses as an important target for pollution prevention outreach because they typically lack resources to fund their own environmental personnel, but collectively are responsible for a large percentage of waste.</p>

	<p>http://www.epa.gov/opptintr/p2home/programs/smallbus.htm</p> <p>EPA provides funds to the Small Business Administration (SBA) for grants that support the development of 4 pilot environmental programs in state Small Business Development Centers, and directly funds 2 state pilot projects. This partnership between EPA and the SBA promotes pollution prevention activities in small businesses.</p> <p>http://www.epa.gov/opptintr/p2home/assist/index.htm</p>
Toxic Release Inventory (TRI)	<p>EPA collects and compiles into the TRI information about toxic chemicals that are being used, manufactured, transported, or released into the environment. The public availability of this information creates an incentive for industries to reduce and prevent pollution releases. A majority of information on this website concerns reporting guidelines, but the “What Is TRI?” explains how TRI has encouraged firms to adopt pollution prevention strategies for preventing pollution.</p> <p>http://www.epa.gov/tri</p>
Waste Minimization	<p>EPA’s hazardous waste program provides information regarding the benefits of reducing and preventing the generation of hazardous waste. Much of the waste minimization information focuses on PBT chemicals in hazardous waste. The regulations do not mandate explicit waste reduction or prevention targets. The hazardous waste program provides information and resources to encourage firms to prevent pollution.</p> <p>http://www.epa.gov/epaoswer/hazwaste/minimize/</p>
Waste Prevention	<p>Offers information about efforts to reduce municipal solid waste and examples of how source reduction efforts benefit business and industry, governments, and consumers.</p> <p>http://www.epa.gov/epaoswer/non-hw/reduce/prevent.htm</p>
WasteWi\$e Program	<p>Voluntary program that targets the reduction of municipal solid waste. WasteWise participants represent numerous sectors, including large and small businesses, institutions, such as hospitals and universities, and non-profits, as well as state, local, and tribal governments. EPA oversees the WasteWise program, and provides numerous resources and tools on the website. EPA provides a WasteWise hotline service, an online resource directly, incentives through an awards program, forums, case studies, journal articles and advertisements, and guidance publications.</p> <p>http://www.epa.gov/wastewise/</p>
Water Efficiency	<p>EPA’s water efficiency program, Water Alliances for Voluntary Efficiency (WAVE), EPA’s water efficiency program, is primarily concerned with municipal water use. The website explains the pollution prevention benefits associated with water conservation, and provides publications and related water conservation information to a diverse audience, including homeowners and state governments.</p> <p>http://www.epa.gov/owm/genwave.htm</p>

END-OF-PIPE TREATMENT

INTRODUCTION

While EPA's pollution prevention programs focus on voluntary initiatives, the end-of-pipe treatment programs focus primarily on regulatory compliance. The media-based programs, such as the Clean Air Act (CAA), the Resource Conservation and Recovery Act (RCRA), and the Clean Water Act (CWA) establish command and control regimes for managing and treating emissions and waste. The programs target the regulated community and state implementing agencies, and offer technical reports, regulatory compliance documents, software tools, training, and incentives to improve waste management practices. The programs also implement public education efforts, and disseminate general information characterizing the nature of treatment activities in communities.

The following table is organized by media and program, i.e. air, water, and waste, and provides a brief description of programs addressing end-of-pipe treatment activities.

Media	Program	Target Audience	Activities
All	N/A	Regulated Community (RC), state	<p>Technical Information, Partnerships: Environmental Technology Verification Program (ETV), verifies the performance of innovative technical solutions to pollution problems. ETV operates through public/private testing partnerships to evaluate the performance of environmental technology in all media - air, water, soil, ecosystems, waste, pollution prevention, and monitoring. Market input is conveyed by the active involvement of stakeholder groups consisting of technology buyers, sellers, permittees, consultants, financiers, exporters and others within each sector; over 900 Americans participate in 18 groups at the present time. http://www.epa.gov/etv/index.htm</p>
Air	CAA	Regulated Community (RC), state/local government, citizens	<p>Technical Information: Clean Air Technology Center (CATC) serves as a resource on areas of emerging and existing air pollution prevention and control technologies, and provides public access to data and information on their use, effectiveness and cost. CATC provides technical support related to technical and economic feasibility, operation and maintenance of these technologies. http://www.epa.gov/ttn/catc/</p> <p>CATC Products and Resources: Allows the user to download technical reports, cost information and software. Products include: 27 Air Pollution Technology Fact Sheets, 4 Technical Bulletins, 36 Air Pollution Technical Reports, and 10 software items to assist modeling and emissions activity. http://www.epa.gov/ttn/catc/products.html</p>

Air	CAA	RC, state and local government	<p>Technical Information: Allows the user to query, view and download data about Source Specific Technology Applications or Air Pollution Regulatory Requirements. The RACT/BACT/LAER Clearinghouse (RBLC) database contains information distilled from early notification submittals and air permits received from State and local air pollution control programs in the United States. The RBLC site also contains summary information on air pollution emission standards. The data assists State/local agency personnel and private companies in determining what types of controls and pollution prevention measures have been applied to and/or are required for various sources and the effectiveness of these technologies.</p> <p>http://www.epa.gov/ttn/catc/about.html</p>
Air	CAA	Small business	<p>Outreach: EPA has established the Small Business Assistance Program (SBAP) to provide technical assistance to State small business programs. This site has been developed to allow State and EPA programs to share information about their small business assistance materials and activities. The site includes several documents explaining how to conduct audits and determine whether they need to apply for air permits.</p> <p>http://www.epa.gov/ttn/sbap/welcome</p>
Air	CAA	RC, state government	<p>Tools and Resources: Provides numerous software packages that can be used to estimate emissions, measure air pollution data, monitor emissions and develop models, and determine appropriate air emission standards. Site provides data, software and links for software assistance. http://www.epa.gov/oar/oaqps/emissns.html</p>
Air	CICA, the US-Mexico Border Project	International, government	<p>Technical Information, Collaboration: CICA provides technical support and assistance in evaluating air pollution problems along the U.S.-México border. CICA provides ready access to EPA information and expertise. EPA and its contractors provide topics such as: Evaluation of source emissions; Identification of control alternatives; Estimates of control costs; Advice on permit conditions to assure good operation and maintenance of control; equipment. Also, CICA provides access to control technology guidance and information transfer, including: Alternative control technology documents for specific types of air pollution sources; Personal computer software programs to assess emissions control problems and potential solutions. http://www.epa.gov/ttn/catc/cica/</p>
Air	CAA – Acid Rain	RC	<p>Incentive Based System: The program employs both traditional and innovative, market-based approaches for</p>

	Program		controlling air pollution. Site provides information about the allowance trading system, costs of abatement and treatment. Information primarily addresses regulatory compliance. http://www.epa.gov/airmarkets/arp/overview.html
Air	CAA – Mobile Sources	Citizens, states, business	Public education: Program focuses on limiting emissions from mobile sources. The Office of Transportation and Air Quality's (OTAQ) mission is to advance clean fuels and technology. OTAQ is responsible for carrying out laws to control air pollution from motor vehicles, engines, and their fuels. http://www.epa.gov/OMSWWW/
Air	CAA and RCRA – Hazardous Waste Combustion	RC, government	Technical Information: Reports provide technical analysis by EPA concerning emissions of dioxins/furans and particulate matter (PM) from cement kilns, lightweight aggregate kilns, incinerators, and industrial boilers. Provides process descriptions of each of these hazardous waste combustors. Also includes analysis of risk assessment, standards selection, emission estimates and engineering costs. Compliance: Toolkit provides guidance to EPA Regions and States on how best to implement the U.S. EPA Hazardous Waste Combustion NESHAP regulation. It also provides guidance to the public and to the regulated community on how U.S. EPA may exercise its discretion in implementing its regulation. Posts EPA memo advocating the treatment of metal-bearing hazardous wastes by metal recovery or stabilization techniques over combustion methods. Includes an appendix containing descriptions of wastes affected by the guidelines set forth in this Policy. http://www.epa.gov/epaoswer/hazwaste/combust.htm http://www.epa.gov/epaoswer/hazwaste/combust/
All	All	RC	Compliance Assistance Tools – produce plain-English guides, consolidated checklists, fact sheets and other tools where needed by small businesses and their information providers to comply with end-of-pipe treatment standards. http://es.epa.gov/oeca/main/compasst/compcenters.html
Air and land	RCRA – Mixed Waste	Citizens, government	Compliance: Provides information about storage standards for mixed waste and the Waste Isolation Plant Program (WIPP). WIPP regulatory documents are legal documents that explain and support EPA's decision to certify that the Department of Energy has met EPA's criteria for opening the Waste Isolation Pilot Plant. WIPP publications provide information about different aspects

			<p>of the WIPP program: radiation and radiation protection issues, EPA's role and activities, and general information. http://www.epa.gov/radiation/wipp/index.html</p> <p>Public Education: Site provides non-technical documents explaining the WIPP program and mixed waste disposal. http://www.epa.gov/radiation/wipp/index.html</p>
Air and land	RCRA – Mixed Waste	RC, government, citizens	<p>Compliance: Site provides information about treatment standards applicable to mixed waste as well as over 10 documents providing compliance assistance and general information.</p> <p>Technical Assistance: This site helps mixed waste generators find commercially available mixed waste treatment, storage, or disposal capacity for their mixed waste streams. Also includes a list of other DOE Web sites with technology information. Provides 31 documents related to treatment technologies. Addresses current and emerging treatment options. http://www.epa.gov/radiation/mixed-waste/mw_pg11.htm</p>
All	RCRA	RC	<p>Technical Information: Provides definitions and general descriptions of 19 waste treatment technologies. http://www.epa.gov/epaoswer/osw/treattech.htm.</p>
All	RCRA	RC	<p>Compliance: Provides information about the regulations governing storage, treatment and disposal of hazardous waste. Provides general background information and includes statistics regarding waste generation rates, defines treatment, using the RCRA definition, as well as storage and disposal. Provides links to waste treatment resources, such as the RCRA Permit Policy Compendium and RCRA Online. The information is factual and explains the basic RCRA waste treatment requirements in plain English. http://www.epa.gov/epaoswer/osw/tsd.htm</p> <p>Compliance Assistance: RCRA Online database is designed to enable users to locate documents, including publications and other outreach materials, that cover a wide range of RCRA issues and topics. Memos address a number of RCRA issues, including hazardous waste treatment issues. The memos provide guidance for regulatory compliance. http://www.epa.gov/rcraonline</p>
All	RCRA	Citizens, RC	<p>Public Education: Resources provide education and outreach about EPA's hazardous waste management program. Fact sheets provide a basic overview of EPA's hazardous waste regulations and include state hazardous waste contacts. http://www.epa.gov/epaoswer/general/manag-</p>

			hw/manag-hw.htm
All	RCRA	Citizens, RC, government	<p>Public Education and Compliance: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the RCRA. Tracks many types of information about the regulated universe of RCRA hazardous waste handlers. RCRAInfo characterizes facility status, regulated activities, and compliance histories and captures detailed data on the generation of hazardous waste from large quantity generators and on waste management practices from treatment, storage, and disposal facilities.</p> <p>http://www.epa.gov/epaoswer/hazwaste/data/index.htm</p> <p>Includes information about the social aspects associated with the siting of hazardous waste treatment facilities, and suggests creative mechanisms for collaboration between the community, industry and government.</p> <p>http://www.epa.gov/epaoswer/hazwaste/tsds/site/sites.htm</p> <p>Also includes information about technical issues associated with siting hazardous waste treatment facilities.</p> <p>http://www.epa.gov/epaoswer/hazwaste/tsds/site/sites.htm</p>
All	RCRA	RC, state government	<p>Technical Information: Capacity Assurance – EPA collected data and determined that adequate national capacity for hazardous waste treatment existed. Report is organized according to type of treatment technology.</p> <p>http://www.epa.gov/epaoswer/hazwaste/tsds/capacity/</p>
All	RCRA	RC, government	<p>Technical Information, Compliance Assistance: Land Disposal Restriction (LDR) program establishes a protocol and treatment requirements that make the waste safe for land disposal. Guidance documents explain the regulatory requirements. More technical documents describe the treatment technologies, and how technologies demonstrate compliance with the standards. Specifically, resources address soil treatment, how to stabilize organic bearing hazardous waste, waste analysis at facilities that generate, treat, store and dispose of hw, how to generate data that characterizes the performance of treatment systems in terms of composition of treated hw streams plus treatment system operation and design.</p> <p>http://www.epa.gov/epaoswer/hazwaste/ldr/</p> <p>Also information about treatment technology background documents, which provides data about the performance of these technologies, is consolidated at the hazardous waste treatment technologies website.</p> <p>http://www.epa.gov/epaoswer/hazwaste/ldr/haz.htm</p> <p>General Information: Also includes frequently asked</p>

			<p>questions, links to hazardous waste and chemical data.</p> <p>Training: Provides links to written training materials related to regulatory compliance. http://www.epa.gov/epaoswer/hazwaste/ldr/backgrd.htm</p>
All	RCRA	Citizens, industry, government	<p>Public Education: RCRA views recycling activity as a form of treatment. EPA produces much guidance concerning recycling of non-hazardous and hazardous materials.</p> <ul style="list-style-type: none"> • Non-Hazardous Waste Recycling: EPA provides an overview, information about the recycling process, recycling facts and figures (rates for states and nationwide), opportunities, recycling publications, and non-EPA links. http://www.epa.gov/epaoswer/non-hw/muncpl/recycle.htm • Hazardous Waste Recycling: Provides information about recycling used oil, universal wastes (hazardous waste batteries, pesticides, thermostats, and lamps), waste-derived fertilizers. http://www.epa.gov/epaoswer/osw/hazwaste.htm#recycle
Water	Clean Water Act (CWA) – Wastewater Management	RC, government, citizens	<p>Program Oversight, Technical Assistance, Training: EPA’s Office of Wastewater Management oversees a wide range of programs contributing to the well-being of the nation’s waters and watersheds. OWM programs promote compliance with NPDES (control of combined sewer and sanitary sewer overflows), oversight of National Pretreatment program, enhancement of biosolids management program, administering grants for environmental infrastructure improvements, provide technical advice and training to industries and municipalities to improve wastewater regulatory compliance, and administer programs to manage animal feeding operations (AFO) wastes.</p> <p>Public Outreach: OWM administers outreach, technical assistance and training programs to help small, rural and underserved communities provide adequate wastewater treatment and disposal services.</p> <p>Incentive-based approaches: OWM manages EPA’s national award recognition program for wastewater management excellence in municipalities and wastewater treatment facilities, presented for outstanding and innovative practices in operations and maintenance, beneficial biosolids use, pretreatment management, storm water and combined sewer overflows controls. http://www.epa.gov/OWM/</p>

Water	CWA – National Pretreatment Program	RC, state government	<p>Technical Information: Provides information about analytical methods, issue and technical papers.</p> <p>Compliance Assistance: Provides information about pretreatment standards and limits on prohibited discharge standards. Also explains relationship to NPDES regulations, and offers fact sheets and guidance documents.</p> <p>Training/Seminars: Posts notices about upcoming training workshops and seminars. http://cfpub1.epa.gov/npdes/home.cfm?program_id=3</p>
Water	CWA – National Pollutant Discharge Elimination System (NPDES)	RC, state government	<p>Technical and Compliance Information: The site contains technical and regulatory information about control of water discharges via the NPDES permit program. Provides information related to: Technology Based Permitting, Water Quality Based Permitting, Storm Water Discharges from Industrial Facilities, Storm Water Discharges from Construction Activities, and National Pretreatment Program. Provides links to several technical pretreatment documents written by trade organizations. Guidance documents address Secondary Treatment Standards, Water Quality Based Permitting, Combined Sewer Overflows, Sanitary Sewer Overflows, Municipal Separate Storm Sewer Systems, Storm Water Discharges from Industrial Facilities, National Pretreatment and Biosolids. http://cfpub.epa.gov/npdes/</p>
Water	CWA - Wastewater	RC, local governments	<p>Technical and Compliance Assistance: Municipal Treatment Technologies – EPA provides both direct and indirect assistance in the area of municipal wastewater treatment technologies. Direct assistance includes one-on-one discussions about design, operation and maintenance of systems, and the identification and solution of problems. Indirect assistance includes support for the development of regulations; technical information; guidance, assessments, evaluation, and cost estimates for the design, construction, and operation and maintenance of municipal wastewater treatment facilities.</p> <p>EPA's Municipal Technology Assessment program supports innovative and alternative technology development through a number of efforts and partners. Products and services available include Facility design manuals, Technology assessments, Fact sheets on innovative and alternative technologies, Wet weather technology fact sheets, Technology verifications centers,</p>

			Small community technical assistance, Research and development, and Technology Transfer. http://www.epa.gov/OWM/muni.htm
Water	CWA – TMDL	RC, state government	Compliance Assistance: provides information on EPA's Total Maximum Daily Load (TMDL) Program, including what TMDLs are, and regulatory guidance, how EPA establishes TMDLs. Information focuses on water quality and determining appropriate levels of discharge. http://www.epa.gov/OWOW/tmdl/index.html
Water	CWA – Coastal Oceans Program	RC, state government	Technical Information and Compliance Assistance: provides access to information on ocean discharges, ocean dumping, marine debris efforts, and discusses ocean discharge criteria and limits. http://www.epa.gov/OWOW/oceans/index.html
Water	Non-Point Source Pollution	Industry, citizens, government	Public Education: Provides information about polluted runoff and exchange information about methods for reducing the impact of non-point source pollution. Provides information about how to manage NPS and reduce and control it – best management practices (BMP), according to the following categories: Agriculture, Forestry, Hydromodification/Habitat Alteration, Marinas/Boating, Roads, Highways, and Bridges, Urban, Wetland/Riparian Management. http://www.epa.gov/OWOW/NPS/index.html

REMEDIATION ACTIVITY

INTRODUCTION

Although a majority of EPA's remediation activities stem from the Superfund program, other programs, such as the Underground Storage Tank program, Federal Facilities program, and RCRA, address cleanup issues. Agency remediation activities involve both voluntary and regulatory actions. Remediation policy includes public education, technical information and assistance, products and resources, compliance assistance, grants and funding, enforcement, training, and incentive-based voluntary approaches.

SUPERFUND

Congress established the Superfund Program in 1980 to locate, investigate, and clean up the worst sites nationwide. The EPA collaborates with individual states and tribal governments to implement the Superfund program. The Superfund website provides an overview of the Superfund program, highlights key steps in the Superfund cleanup process, guides users to enforcement information, lists EPA's Superfund offices and partnership organizations, and provides answers to frequently asked questions (<http://www.epa.gov/superfund/about.htm>).

EPA also provides extensive information about the accomplishments of the Superfund program. The Superfund Cleanup Figures site provides statistics regarding cleanup progress as of September 2000 (<http://www.epa.gov/superfund/action/process/mgmtrpt.htm>). The major accomplishments include:

- Completion of 757 cleanup constructions at Superfund sites
- 92% of the 1450 National Priority List (NPL) sites were characterized as undergoing cleanup construction, by completion of cleanup construction, or as deleted from the list.
- Over 6400 removal actions had been implemented at hazardous waste sites to remove immediate threats to human health and the environment.
- Since fiscal year 1992, responsible parties have performed over 70% of new remedial work at NPL sites.
- EPA, States and Tribes had assessed over 41,400 sites and removed over 32,300 sites from the Superfund database to promote the economic redevelopment of the properties.

Overall, EPA employed more than two dozen different types of cleanup approaches that are tailored both to the types of contaminants and the natural resources that are polluted. For contaminated soils, "excavation and removal" was the most common method used. This method commonly removes polluted soil and debris by trucking it from a site and treating it at a licensed hazardous waste facility. The technology most often used at contaminated ground water sites was pump and treat. This method pumps water out of the ground through a series of wells, cleans it by treating the contaminants, and either reinjects it back into the ground, discharges it into surface water, or sends it to a municipal water treatment plant. The three major cleanup approaches used are: excavating and removing hazardous soil and solid waste (45% or 188 sites); covering the land with a protective cap (39% or 161 sites); and pumping and treating contaminated groundwater (34% or 142 sites). Extracting toxic gas from the ground (33 sites) and using natural organisms to breakdown contaminants (12 sites) are the most common innovative technologies used (<http://www.epa.gov/oerrpage/superfund/accomp/400/tools.htm>).

The most recent Superfund Annual Reports to Congress (1997) also summarizes the program accomplishments and reviews initiatives designed to improve the program. EPA launched initiatives related to economic redevelopment (Brownfields, better waste management and site restoration, modifying site assessments), measuring program progress environmental indicators, construction completions), federal facility cleanups, environmental justice, community involvement and outreach, consistent program implementation, enforcement, and state and tribal involvement (<http://www.epa.gov/superfund/action/process/index.htm>).

BROWNFIELDS

EPA has launched the Brownfields program to respond to abandoned, idled, or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination. EPA has implemented numerous projects and initiatives under this program, the majority of which provide funding to local communities to conduct assessment and restoration activities. EPA is building partnerships with States, cities, and community representatives and among Federal agencies to develop strategies for promoting public participation and community involvement in Brownfields decision-making (<http://www.epa.gov/brownfields/>).

RCRA

The RCRA Corrective Action program targets releases at active hazardous waste facilities. Approximately 3700 facilities are in the corrective action workload. The degree of investigation and subsequent Corrective Action necessary to protect human health and the environment varies significantly among facilities. The Office of Solid Waste relies primarily on Agency guidance, rather than regulations, to implement the Corrective Action Program. Agency guidance includes technical resources, interpretative memos, and general compliance guidance documents. RCRA corrective action differs from Superfund in that it deals with sites that have viable operators and on-going operations (<http://www.epa.gov/epaoswer/hazwaste/ca/index.htm>).

PETROLEUM & HAZARDOUS SUBSTANCE UNDERGROUND STORAGE TANKS (RCRA)

The RCRA Underground Storage Tank (UST) program primarily mandates installation and operation standards to prevent and detect releases, but also requires remediation of leaking USTs. EPA regulations require UST owners and operators to respond to a release by reporting it, removing its source, mitigating fire and safety hazards, investigating the extent of the contamination, and cleaning up soil and ground water as needed to protect human health and the environment. EPA also provides funding for UST remediation through the Leaking Underground Storage Tank (LUST) Trust Fund (<http://www.epa.gov/swerust1/cat/index.htm>).

OIL SPILLS

Facilities report almost 14,000 oil spills annually. Although many spills are contained and cleaned up by the party responsible for the spill, some spills require assistance from local and state agencies, and occasionally, the federal government. EPA is the lead federal response agency for oil spills occurring in inland waters, and the U.S. Coast Guard is the lead response agency for spills in coastal waters and deep-water ports (<http://www.epa.gov/oilspill/response.htm>).

FEDERAL FACILITY CLEANUP

The Federal Facilities Restoration and Reuse program addresses remediation of federal facilities that are contaminated with hazardous waste, unexploded ordnance, radioactive waste, fuels, and a variety of other toxic contaminants. These facilities include many different types of sites, such as abandoned mines, nuclear weapons production plants, fuel distribution areas, and landfills. To overcome the difficulties posed by contamination at federal facilities, EPA's Federal Facilities Restoration and Reuse Office (FFRRO) works with DoD, DOE, and other federal entities to help them develop creative, cost-effective solutions to their environmental problems. FFRRO's overall mission is to facilitate faster, more effective, and less costly cleanup and reuse of federal facilities (<http://www.epa.gov/swerffrr/default.htm>).

NATURE OF REMEDIATION ACTIVITIES

The following table consolidates information about the nature and frequency of Agency remediation activities. The table is organized according to the cleanup program.

Program	Target Audience	General Approach	Specific Activities
Mixed Waste	RC, government, citizens	EPA provides regulatory oversight, technical resource development and guidance.	<p>Radiological and Mixed Waste remediation program seeks to: pursue existing, emerging and innovative remedial technologies, develop guidance for better, cost-effective remedial actions, provide technical support to EPA's Superfund program, and develop, organize, and execute Inter-Governmental projects which foster innovative, effective, and efficient treatment technologies.</p> <p>Main focus areas include Risk Assessment, Policy Development and Implementation, Site Assessment and Assistance, Technology Assessment, and Technology Transfer. Site provides links to past project successes and public announcements.</p> <p>http://www.epa.gov/radiation/technology/</p>
UST, Superfund, RCRA	RC, states	Provide Technical Assistance	<p>Natural Attenuation: EPA provides seminars, frequently asked questions, partnerships to encourage research, and guidance to determine when this remedial activity is appropriate.</p> <p>http://www.epa.gov/swerust1/mna/index.htm http://www.epa.gov/swerust1/cat/natatt.htm</p>
Superfund	All	Public Education, Technical Assistance, Compliance Assistance, Enforcement, Data Collection & Consolidation	<i>Please see below for specific activities.</i>

Superfund	All	Public Education	Provides information the history and background of the program, as well as a plain English explanation of the cleanup process and health-related information. http://www.epa.gov/superfund/about.htm
Superfund	All	Public Education	<p>Site Specific Information: Superfund Sites is “one-stop shop” for information about a specific Superfund site or group of sites. One can find sites by geography, contaminant EPA ID, and other identifiers.</p> <p>CERCLIS Hazardous Waste Sites - CERCLIS is a database that includes all sites currently on the National Priorities List, or being considered for it.</p> <p>Archive (NFRAP) Sites - NFRAP sites are former CERCLIS sites.</p> <p>Enviromapper: Maps by Geography - The Enviromapper maps a particular area.</p> <p>Surf Your Watershed - Maps both watersheds and Superfund sites in a particular area.</p> <p>Also includes information about site contamination, the media affected by contamination. Much of the information can be used for classrooms or to conduct outreach activities.</p> <p>http://www.epa.gov/superfund/sites/contamin/index.htm</p>
Superfund	All	Public education	<p>Accomplishments: EPA collects data to document cleanup progress. Provides links to information about how the Superfund program cleans up hazardous waste sites and current construction completions of hazardous waste sites. Resources include annual progress reports, Superfund Cleanup Figures, information about Environmental Indicators, and information about Regional Accomplishments.</p> <p>http://www.epa.gov/superfund/action/process/index.htm</p>
Superfund	RC, Government	Compliance Assistance and Data Collection	<p>Environmental Indicators: Specific measure of program performance used to assess progress toward cleaning up a hazardous waste site. EPA collects and reports Environmental Indicators data to: show and identify trends in human activities that impact the environment; show and identify trends in changes in the environment; establish relationships among environmental variables, such as the nature and extent of hazardous wastes and various media; measure and communicate environmental achievement and progress (or lack of progress) made towards a goal; and help to guide its strategic</p>

			<p>planning and budget decisions. http://www.epa.gov/superfund/accomp/ei/ei.htm</p>
Superfund	RC, Government	Technical Assistance, Compliance Assistance, Regulatory Oversight	<p>The three major cleanup approaches used are: excavating and removing hazardous soil and solid waste (45% or 188 sites); covering the land with a protective cap (39% or 161 sites); and pumping and treating contaminated groundwater (34% or 142 sites). Extracting toxic gas from the ground (33 sites) and using natural organisms to breakdown contaminants (12 sites) are the most common innovative technologies used. EPA provides numerous resources to facilitate the cleanup process. http://www.epa.gov/oerrpage/superfund/accomp/400/tools.htm</p>
Superfund	RC, Government	Technical Assistance, Compliance Assistance, Regulatory Oversight	<p>Presumptive Remedies: EPA streamlined the cleanup process in cases where contaminants are similar and cleanup technologies are proven, as at municipal landfills and wood treatment facilities. EPA calls these cost-efficient and timesaving approaches “presumptive remedies.” By applying lessons learned at previous cleanups, the Agency can reduce costs and save time while ensuring cleanup of equal quality. EPA provides technical and compliance resources regarding presumptive remedies. http://www.epa.gov/oerrpage/superfund/accomp/400/tools.htm</p>
Superfund	RC, Government	Technical Assistance, Compliance Assistance, Regulatory Oversight	<p>Resources about the process including stakeholder involvement, policies and procedures, and partner programs: Dynamic Field Activities: Iterative field work process that is designed to reduce the number of mobilizations necessary to reach a site decision. Because of its flexible approach to data collection, it is applicable throughout the Superfund response process. Website provides questions/answers, technical guidance, information about systematic planning, and decision support software. Rules of Thumb for Superfund Remedy Selection: Describes key principles and expectations, interspersed with "best practices" based on program experience, that should be consulted during the Superfund remedy selection</p>

			<p>process. Organized into three major policy areas: 1) risk assessment and risk management, 2) developing remedial alternatives, and 3) groundwater response actions. The purpose of this guide is to briefly summarize key elements of various remedy selection guidance documents and policies in one publication.</p> <p>http://www.epa.gov/superfund/sites/cleanup/index.htm</p>
Superfund	Citizens, Government, Business	Public Outreach, Community Development	<p>Superfund Redevelopment Successes: EPA provides case studies and success stories describing the redevelopment program. Superfund program works to make sites productive parts of the community again.</p> <p>http://www.epa.gov/superfund/action/redevelop/index.htm</p>
Superfund	RC, Government	Technical and Compliance Assistance	<p>Policy guidance: EPA provides written documents regarding policies on risk assessment, groundwater, soil screening, redevelopment, and contract management.</p> <p>http://www.epa.gov/superfund/action/guidance/index.htm</p>
Superfund	RC, Government, Citizens	Technical Assistance	<p>Products: vast array of products available to learn more about cleanups, including information about NPL sites, CERCLIS (database), RODs (Record of Decision documenting cleanup plan), NFRAP (No Further Response Action Planned), and more.</p> <p>http://www.epa.gov/superfund/sites/products/index.htm</p> <p>EPA databases: the following databases track Superfund cleanup-related information: Envirofacts, Enviro\$en\$, Emergency Response Notification System (ERNS) (release info maintained by NRC), Hazardous Waste Clean-up Information (CLU-IN), Agency for Toxic Substances and Disease Registry's (ATSDR), HazDat Database, Record of Decision (ROD) Abstracts, Superfund Hazardous Waste Site Basic Query, Superfund Hazardous Waste Site Advanced Query, Search the CERCLIS Database, and Integrated Risk Information System (IRIS).</p> <p>http://www.epa.gov/superfund/resources/database/index.htm</p> <p>Software: assists the public understand Superfund data and helps states and responsible parties implement the cleanup process. Software programs include:</p> <p>Ecotox Thresholds</p> <p>LandView (mapping tool)</p> <p>Enviromapper for Superfund (map hazardous</p>

			<p>waste sites)</p> <p>Hazard Ranking System (HRS) Site Assessment Tools and Software</p> <ul style="list-style-type: none"> - Preliminary Assessment Score (PA-Score) PA-Score software assists with site assessment investigations at the Preliminary Assessment (PA) stage of site investigations. The PA-Score software generates PA scoresheets and the Potential Hazardous Waste Site Preliminary Assessment Form with associated documentation. - Preliminary Ranking Evaluation Score (PREscore) PREscore software assists with site investigations and Hazard Ranking System (HRS) scoring. The PREscore software generates a Preliminary Ranking Evaluation score and associated documentation. The PREscore software package includes both the PREscore and PREprint computer programs. The PREscore program performs HRS calculations from raw data, derives values from hazardous substance information, and computes site scores. - Superfund Chemical Data Matrix (SCDM) SCDM is a source for factor values and benchmark values applied when evaluating potential National Priorities List (NPL) sites using the Hazard Ranking System (HRS). SCDM contains HRS factor values and benchmark values for hazardous substances that are frequently found at sites evaluated using the HRS, as well as the physical, chemical, and radiological data used to calculate those values. The accompanying Superfund Chemical Data Matrix Report describes how data are selected or calculated for inclusion in SCDM and how SCDM data, HRS factor values, and benchmarks are presented in formatted printouts. <p>http://www.epa.gov/superfund/resources/software/index.htm</p>
Superfund	RC, Government, Citizens	Financial Assistance	<p>Superfund Grants: Provides resources to help citizens get assistance and grants that will help them better understand and get involved in Superfund activities, as well as learn about the variety of community programs, technical assistance and training, and monetary aid available. Related programs include: Community Advisory Groups, Technical Assistance Grants (TAGs).</p> <p>http://www.epa.gov/superfund/resources/assistance/index.htm</p>

Superfund	RC, Government, Citizens	Training	<p>Job training, Technical Outreach Services for Communities, regulatory training materials, Hazard Ranking System (HRS) Training, and Emergency Response Program Training resources are available. http://www.epa.gov/superfund/resources/assistance/index.htm</p>
Brownfields	Citizens, local government, lenders and developers	Funding	<p>EPA provides funding to communities through the following pilot programs:</p> <p>Assessment Demonstration Pilots: empowers stakeholders to work together in a timely manner to prevent, assess, safely cleanup and sustainably reuse Brownfields. Approximately 307 pilots have been awarded.</p> <p>Supplemental Assessment Demonstration Pilots: Funding to be used to continuance or expansion of original pilots under assessment efforts.</p> <p>Greenspace Purposes: Provides funding for assess the contamination of sites used for greenspace purposes.</p> <p>Revolving Loan Fund Pilots: Provides capitalization funds to managing entity that are used to make loans for Brownfields cleanup. Approximately 70 pilots had been awarded as of FY 1999.</p> <p>Job Training and Development Demonstration Pilots: Funds are used to unite community groups, investors, developers and other affected parties to provide training for residents in communities impacted by Brownfields.</p> <p>http://www.epa.gov/brownfields/</p>
Brownfields	Citizens, local government, lenders and developers	Technical Assistance, Partnerships	<p>EPA is issuing guidance that will clarify the liability of prospective purchasers, lenders, property owners, and others regarding their association with and activities at a site. These guidances will clearly state EPA's decision to use its enforcement discretion in specific situations not to pursue such parties. EPA anticipates that these clear statements will alleviate concerns these parties may have and will facilitate their involvement in cleanup and redevelopment.</p> <p>EPA is building partnerships with States, cities, and community representatives and among Federal agencies to develop strategies for promoting public participation and community involvement in Brownfields decision-making. Federal Partnerships:</p>

			include the Federal Interagency Working Group, Brownfields National Partnership Action Agenda, Brownfields Showcase Communities, Clean Air/Brownfields Partnership Pilot. http://www.epa.gov/brownfields/
Brownfields	Citizens, local government, lenders and developers	Technical Resources	Resources include the Brownfields EnviroMapper Application to View Actual and Potential Brownfields Tax Incentive Zones, Brownfields Research Tools, and case studies and profiles of successful pilots. http://www.epa.gov/brownfields/
RCRA Corrective Action	RC, Government	Enhanced flexibility in cleanup policy and Technical Assistance	RCRA Reforms: Despite the progress made, states, environmental groups, and the regulated community have raised concerns, including: slow progress in achieving cleanup or other environmental results; an emphasis on process and reports over actual work in the field; unrealistic, impractical or overly conservative cleanup goals; and lack of meaningful public participation. EPA has launched the RCRA Cleanup Reforms to address these concerns. RCRA Cleanup Reforms initiative has established realistic cleanup goals using environmental indicators, and produced policy documents and regulatory clarifications to streamline the process. http://www.epa.gov/epaoswer/hazwaste/ca/index.htm
UST Corrective Action	RC, Government, Citizens	Technical Assistance, Compliance Information, Funding	EPA has issued interpretive memos, technical reports, general information and cleanup funding for leaking USTs . http://www.epa.gov/swrust1/cat/index.htm
Oil Spills	RC, Government, Citizens	Technical Assistance, Compliance Information	EPA is the lead federal response agency for oil spills occurring in inland waters, and the U.S. Coast Guard is the lead response agency for spills in coastal waters and deep water ports. EPA provides links to information about releases of oil, as well as general guidance documents describing the oil spill notification regulations. http://www.epa.gov/oilspill/response.htm
Federal Facilities	Government	Technical Assistance, Partnerships	EPA's Federal Facilities Restoration and Reuse Office (FFRRO) works with DoD, DOE, and other federal entities to help them develop creative, cost-effective solutions to their environmental problems. FFRRO provides technical resources and facilitates collaboration related to cleanup efforts. http://www.epa.gov/swerffrr/default.htm

Technology Innovation Office (TIO)	RC, Government, Citizens	Technical Assistance, Information Sharing	<p>TIO's mission within the Superfund program is to increase the applications of innovative technologies for the characterization and treatment of contaminated waste sites, soils, and groundwater. TIO has encouraged and relied on cooperative ventures with other partners to accomplish most of its early goals. This effort to leverage resources has lead to numerous joint efforts that have enhanced the state of remediation. Since its creation, TIO has worked with many partners inside EPA, in other federal agencies, and in the private sector to improve the Nation's understanding of remediation treatment technologies and reduce the impediments to their widespread use.</p> <p>http://www.epa.gov/tio</p>
TIO	RC, Government	Technical Information	<p>Provides numerous technology documents, organized as follows:</p> <ul style="list-style-type: none"> • Publications on Remediation Technologies (includes case studies, demonstration projects, technical information about specific remediation technologies, monitoring, etc.) • Publications on Site Characterization Technologies (Provides technical info and educational info. Technical information includes Hardware and software that implement the technical aspects of project planning, support the selection and use of sampling and analytical technologies that serve to generate environmental data, and assist with the interpretation and presentation of data. Educational materials: provide policy information, and guidance that relates to the measurement and monitoring aspects of site cleanups, and especially those materials relevant to current efforts to modernize site cleanup practices through the use of "smarter" strategies to deploy technology tools.) • Publications on Vendor • Publications on Partnerships, Consortia, and Roundtable (links to 9 different partnership/consortia/roundtable groups). • Publications on Regulatory and Policy Issues • Multimedia Content (Videos, Internet Seminars, and Conference Webcasts)

			<ul style="list-style-type: none"> • Databases of Technology and Vendor Information http://www.epa.gov/tio
TIO	RC, Government	Technical Resources	<p>TechDirect: TechDirect, hosted by the TIO, is an information service that highlights new publications and events of interest to site remediation and site assessment professionals. At the beginning of every month, the service, via e-mail, will distribute a message describing the availability of publications and events.</p> <p>http://www.epa.gov/tio</p>
TIO	RC, Government	Technical Resources	<p>Clu-IN Site: The Hazardous Waste Clean-up Information (CLU-IN) Web Site provides information about innovative treatment technologies to the hazardous waste remediation community. It describes programs, organizations, publications and other tools for federal and state personnel, consulting engineers, technology developers and vendors, remediation contractors, researchers, community groups, and individual citizens. The site was developed by the EPA but is intended as a forum for all waste remediation stakeholders.</p> <p>CLU-IN offers remediation, initiatives and partnerships, case studies, and vendor information. For example, it provides general descriptions of 15 remediation technologies.</p> <p>http://clu-in.org/</p>
Lead Abatement	RC, Government, Citizens	Technical Information, Regulatory Guidance	<p>Multiple documents regarding lead hazards and abatement.</p> <p>Renovation and Remodeling Model Training Course—EPA's model training titled “Minimizing Lead-Based Paint Hazards During Renovation, Remodeling, and Painting” teaches how to minimize and contain lead dust, and clean-up work areas in order to protect occupants from exposure to lead.</p> <p>http://www.epa.gov/lead/new.htm</p>