

**Environmental Protection Agency  
2005 Annual Performance Plan and Congressional Justification**

**Table of Contents**

---

<b>Goal 4: Healthy Communities and Ecosystems</b> .....	IV-1
Chemical, Organism, and Pesticide Risks .....	IV-22
Communities .....	IV-80
Ecosystems.....	IV-103
Enhance Science and Research.....	IV-134
Subject Index .....	IV-176



## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Healthy Communities and Ecosystems

**STRATEGIC GOAL:** Protect, sustain, or restore the health of people, communities, and ecosystems using integrated and comprehensive approaches and partnerships.

#### Resource Summary (Dollars in thousands)

	FY 2003	FY 2004	FY 2005	FY 2005 Req. v.
	Actuals	Pres. Bud.	Pres. Bud.	FY 2004 Pres Bud
<b>Healthy Communities and Ecosystems</b>	<b>\$1,211,267.2</b>	<b>\$1,262,438.1</b>	<b>\$1,298,932.0</b>	<b>\$36,493.9</b>
Chemical, Organism, and Pesticide Risks	\$345,298.1	\$364,126.3	\$383,305.4	\$19,179.2
Communities	\$313,167.7	\$317,572.9	\$319,958.4	\$2,385.4
Ecosystems	\$171,169.4	\$160,698.1	\$200,844.5	\$40,146.5
Enhance Science and Research	\$380,878.7	\$420,040.9	\$394,823.7	(\$25,217.2)
Total Workyears	3,923.7	3,824.4	3,850.1	25.8

#### **BACKGROUND AND CONTEXT**

To promote healthy communities and ecosystems, EPA must bring together a variety of programs, tools, approaches and resources. The support of a multitude of stakeholders, along with strong partnerships with Federal, State, Tribal and local governments, are necessary to achieve the Agency's goal of protecting, sustaining or restoring healthy communities and ecosystems. The Agency's goal of achieving healthy communities and ecosystems will be accomplished by focusing both on stressors to human health and the environment and the locations at most risk from environmental problems.

A key component of this goal is protecting human health and the environment by identifying, assessing, and reducing the potential risks presented by the thousands of chemicals on which our society and economy have come to depend. These include the pesticides we use to meet national and global demands for food, and the industrial and commercial chemicals found throughout our homes, our workplaces, and the products we use.

Some pest-control methods that are used to ensure an abundant and affordable food supply can cause unwanted environmental or health effects if not used and managed properly. Apart from its role in agriculture, effective pest control is also essential in homes, gardens, rights-of-ways, hospitals, and drinking water treatment facilities. Pesticides are an important part of pest management in each of these settings. EPA licenses pesticides to help ensure they can be used safely and beneficially while avoiding unintended harm to our health or environment. EPA must also address the emerging challenges posed by a growing array of biological organisms—naturally occurring and, increasingly, genetically engineered—that are being used in industrial and agricultural processes.

Agriculture accounts for about 80 percent of all conventional pesticide applications. Herbicides are the most widely used pesticides and account for the greatest expenditure and volume, approximately \$6.4 billion and 534 million pounds in 1999. Biopesticides and reduced risk pesticides are assuming an increasingly important role. For example, safer pesticides, which include biopesticides and reduced risk pesticides, increased in use from 3.6 percent in 1998 to 7.5 percent of total pounds reported for 2002.

Biological agents are potential weapons that could be exploited by terrorists against the United States. EPA's pesticides antimicrobial program has been very responsive to addressing this threat. Antimicrobials play an important role in public health and safety. EPA is conducting comprehensive scientific assessments and developing test protocols to determine product safety and efficacy of products used against chemical and biological weapons of mass destruction, and registering products as necessary. EPA is also developing a timeline for prioritizing and implementing the tests.

EPA programs under this Goal have many indirect effects that significantly augment the stream of benefits they provide. For example, each year the Toxic Substances Control Act (TSCA) New Chemicals program reviews and manages the potential risks from approximately 1,800 new chemicals and 40 products of biotechnology that enter the marketplace. Since its inception, approximately 17,000 new chemicals reviewed by the program have entered United States commerce. This new chemical review process not only protects the public from the possible immediate threats of harmful chemicals like polychlorinated biphenyls (PCBs) from entering the marketplace, but it has also contributed to changing the behavior of the chemical industry, making industry more aware and responsible for the impact these chemicals have on human health and the environment.

Americans come into daily contact with any number of chemicals that entered the market before the New Chemicals Program was established in 1978, yet relatively little is known about many of their potential impacts. Getting basic hazard testing information on large volume chemicals is one focus of EPA's work in the Existing Chemicals program. The voluntary High Production Volume program challenges industry to develop chemical hazard data critical to enabling EPA, State, Tribes, and the public to screen chemicals already in commerce for any risks they may be posing. Risks of other chemicals, such as lead or PCBs are well known, and EPA's responsibility centers on reducing exposure through proper handling or disposal.

The Acute Exposure Guideline Levels (AEGs) Program was designed by EPA to provide scientifically credible data to directly support chemical emergency planning, response, and prevention programs mandated by Congress. Emergency workers and first responders need to know how dangerous a chemical contaminant may be to breathe or touch, and how long it may remain dangerous. The program develops short-term exposure limits applicable to the general population for a wide range of extremely hazardous substances (approximately 400) for purposes related to chemical terrorism and chemical accidents.

In addition to addressing human health and ecosystems and stressors such as chemicals and pesticides, this goal also focuses on those geographic areas with human and ecological communities at most risk. For example the Mexican Border is an area facing unique environmental challenges. At the Mexican Border, EPA addresses local pollution and

infrastructure needs that are priorities for the Mexican and the U.S. governments under the Border 2012 agreement.

As the population in coastal regions grows the challenges to preserve and protect these important ecosystems increase. Through the National Estuary Program, coastal areas have proved valuable grounds for combining innovative and community-based approaches with national guidelines and inter-agency coordination to achieve results.

Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. Yet the nation loses an estimated 58,000 acres per year, and existing wetlands may be degraded by excessive sedimentation, nutrient enrichment, and other factors.<sup>1</sup>

In 2001 the Supreme Court determined that some isolated waters and wetlands are not regulated under the Clean Water Act. Many waters with important aquatic values may no longer be covered by CWA Section 404 protections.

Large water bodies like the Gulf of Mexico, the Great Lakes, and the Chesapeake Bay are surrounded by industrial and other development and have been exposed to substantial pollution over many years at levels higher than current environmental standards permit. As a result, the volume of pollutants in these water bodies has exceeded their natural ability to restore balance. Working with stakeholders, EPA has established special programs to protect and restore these unique resources by addressing the vulnerabilities for each.

EPA's continued enforcement efforts will be strengthened through the development of measures to assess the impact of enforcement activities and assist in targeting areas that pose the greatest risks to human health and the environment, display patterns of noncompliance, and include disproportionately exposed populations. In addition, the EPA's enforcement program supports Environmental Justice effort by focusing enforcement actions and criminal investigations on industries that have repeatedly violated environmental laws in minority and/or low-income areas.

Further, EPA's Brownfields Initiative funds pilot programs and other research efforts; clarifies liability issues; enters into Federal, state and local partnerships; conducts outreach activities; and creates job training and workforce development programs.

EPA's environmental justice program will continue education, outreach, and data availability initiatives. The Program provides a central point for the Agency to address environmental and human health concerns in minority and/or low-income communities--a segment of the population that has been disproportionately exposed to environmental harms and risks. The program will continue to manage the Agency's Environmental Justice Community Small Grants Program that assists community-based organizations working to develop solutions to local environmental issues.

---

<sup>1</sup> Dahl, T.E. 1990. *Status and Trends of Wetlands in the Conterminous United States, 1986 to 1997*. Washington, DC: U.S. Department of the Interior, U.S. Fish and Wildlife Service. Available online at: <http://wetlands.fws.gov/bha/SandT/SandTReport.html>: Report to Congress on the Status and Trends of Wetlands in the Conterminous United States, 1986 to 1997.

The Agency will continue to support the National Environmental Justice Advisory Council (NEJAC) which provides the Agency significant input from interested stakeholders such as community-based organizations, business and industry, academic institutions, state, Tribal and local governments, non-governmental organizations and environmental groups. The Agency will also continue to chair an Interagency Working Group (IWG) consisting of eleven departments and agencies, as well as representatives of various White House offices, to ensure that environmental justice concerns are incorporated into all Federal programs.

## **Research**

EPA has a responsibility to ensure that efforts to reduce potential environmental risks are based on the best available scientific information. Strong science allows identification of the most important sources of risk to human health and the environment as well as the best means to detect, abate, and avoid possible environmental problems, and thereby guides our priorities, policies, and deployment of resources. It is critical that research and scientific assessment be integrated with EPA's policy and regulatory activities. In order to address complex issues in the future, the Agency will design and test fundamentally new tools and management approaches that have potential for achieving environmental results. Under Goal 4, EPA will conduct research in many areas, including emerging areas such as biotechnology and computational toxicology, to help develop better understandings and characterizations of positive environmental outcomes related to healthy communities and ecosystems.

EPA uses several noteworthy mechanisms to ensure scientific relevance, quality, and integration as it seeks to produce sound environmental results. For example, EPA's Science Advisor is responsible for advising the EPA Administrator on science and technology issues to support Agency programs, policies, procedures, and decisions. Also, EPA uses its Science Advisory Board (SAB), an independently chartered Federal Advisory Committee Act committee, to conduct annual, in-depth reviews and analyses of EPA's Science and Technology account. The SAB provides its findings to the House Science Committee and reports findings to EPA's Administrator after every annual review. Under the Science to Achieve Results (STAR) program, all research projects are selected for funding through a rigorous, competitive, and external peer review process designed to ensure that only the highest quality efforts receive funding support. All EPA scientific and technical work products must undergo either internal or external peer review, with major or significant products requiring external peer review. The Agency also uses a Peer Review Handbook (2<sup>nd</sup> Edition) which codifies procedures and guidance for conducting quality EPA peer reviews. Taken together, these mechanisms serve to ensure EPA's research and science remains relevant and committed to achieving superior environmental results.

## **MEANS AND STRATEGY**

In coordination with our State and Tribal co-regulators and co-implementers and with the support of industry, environmental groups, and other stakeholders, EPA will use multiple approaches to address risks associated with chemicals and pesticides. Improving communities' ability to address local problems is a critical part of our efforts to reduce risk.

The Agency's strategy for reducing the risks of exposures to pesticides and industrial chemicals is based on:

- Identifying and assessing potential risks from7 chemicals, pesticides, and microorganisms;
- Setting priorities for addressing these risks;
- Developing and implementing strategies aimed at preventing risks and managing those risks that cannot be prevented;
- Implementing regulatory measures, such as systematic review of pesticides and new chemicals, and developing and implementing procedures for safe production, use, storage, and handling of chemicals, pesticides, and microorganisms;
- Employing innovative voluntary measures, such as promoting the use of reduced-risk pesticides and challenging companies to assess and reduce chemical risks and develop safer and less polluting new chemicals, processes, and technologies; and
- Conducting outreach and training, and establishing partnerships.

### **Pesticides Management**

EPA has the responsibility under Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and the Federal Food and Drug Cosmetic Act (FFDCA) to set terms and conditions of pesticide registration, marketing and use. EPA will use these authorities to reduce risk from residues of pesticides, particularly those pesticides with the highest potential to cause harm to human health and the environment, including those which pose particular risks to children and other susceptible populations. All new pesticides are reviewed for registration through an extensive review and evaluation of human health and ecosystem studies and data, applying the most recent scientific advances in risk assessment. The Registration program includes registration activities, such as setting tolerances, registering new active ingredients and new uses, and handling experimental use permits and emergency exemptions.

New registration actions result in more pesticides on the market that meet the strict Food Quality Protection Act (FQPA) pesticide risk-based standards, which brings the Agency closer to the objective of reducing adverse risks from pesticide use. In 2005, the Agency will continue to promote accelerated registrations for pesticides that provide improved risk reduction or risk prevention compared to those currently on the market. Progressively replacing older, higher-risk pesticides is one of the most effective methods for curtailing adverse impact on health and the ecosystem while preserving food quality and production rates. EPA measures adoption of the reduced-risk pesticides by tracking the amount of acres treated --- or "acre treatments" --- using reduced risk pesticides. By 2005, an estimated 8.7 percent of total acre-treatments are expected to use reduced-risk pesticides.

Another priority is to review older pesticides in applying the FQPA safety standards. We will complete pesticide reregistration eligibility decisions by 2008 (food use by 2006) and, in tandem with that work, meet our FQPA statutory goal of reassessing 9,721 existing tolerances by August 2006. The Strategic Agricultural Partnership Initiative and the Pesticide Environmental Stewardship Program collaborate with USDA, States, and non-governmental organizations to demonstrate integrated pest management strategies that reduce pesticide residues in the environment.

Pesticide and pest control issues extend beyond the farm. Public health officials and homeowners use pesticides to control a variety of pests, protect human health, and benefit consumers. Through our regulatory programs, EPA reviews all pesticides with the goal of minimizing pesticide exposure and risk. For example, as of 2002, children's exposure to organophosphates – an older, riskier class of pesticide – was reduced by 60 percent through the elimination of many uses in and around the house. EPA registers antimicrobials used by public drinking water treatment facilities and by food processing plants and hospitals to disinfect surfaces. Effective antimicrobials are of growing importance as many serious disease-causing organisms become resistant to our antibiotic procedures. To provide environmental, public health, and economic benefits, we will continue addressing risk from older pesticides, making new pesticides available and addressing emergency health or pest damage issues flexibly and efficiently.

Biotechnology has presented the Agency with a range of new issues and scientific challenges as well. Outreach activities on the subject of biotechnology such as public meetings and scientific peer reviews of our policies and assessments are likely to be expanded to keep pace with changing science and the public's demand for information in this area. EPA is working closely with other Federal agencies involved in biotechnology. Adoption of biotechnology has great potential to reduce reliance on some older, more risky chemical pesticides, and to lower worker risks. For example, the use of Bt cotton has reduced the use of other insecticides that present higher risk to wildlife.

## **Toxic Chemicals**

Three primary approaches comprise EPA's strategy to prevent and reduce risks that may be posed by chemicals and microorganisms:

- Preventing the introduction into U.S. commerce of chemicals and organisms that pose unreasonable risks;
- Effectively screening the stock of chemicals already in use for potential risk; and
- Developing and implementing action plans to reduce use of and exposure to chemicals that have been demonstrated to harm humans and the environment.

EPA intends to work with States and Tribes, other Federal agencies, the private sector, and international entities to implement this strategy and, in particular, to make protecting children and the aging population a fundamental goal of public health and environmental protection.

TSCA requires that EPA review all new chemicals and organisms prior to their production or import and be notified of significant new uses for certain chemicals that have already been reviewed.<sup>2</sup> While TSCA gives EPA a 90-day review period, new criteria, such as preventing the introduction of persistent bioaccumulative toxics (PBTs) or considering the use of new chemicals as potential weapons of terror, continue to emerge. An expanded set of screening tools will increase EPA's and industry's efficiency by using the limited data that companies

---

<sup>2</sup> Toxic Substances Control Act Section 5: Manufacturing and Processing Notices, Public Law 94-469, October 11, 1976



provide in their Pre-manufacturing Notice (PMN) submissions to predict potential hazards, exposures, and risks quickly and effectively.

In 2005, EPA will continue to make progress in screening, assessing, and reducing risks posed by the 66,600 chemicals that were in use prior to the enactment of TSCA. Thousands of these chemicals are still used today, and nearly 3,000 of them are “high production volume” (HPV) chemicals, produced or imported in quantities exceeding one million pounds per year. Approximately 300 companies and 100 consortia are voluntarily providing data covering over 2,200 of the more than 2,800 chemicals included in the HPV Challenge Program.<sup>3</sup> EPA will make the data publicly available and screen for potential hazards and risks. We will then identify and set priorities for further assessment, and determine the need to take action to eliminate or effectively manage the risks identified. To support these efforts, we will draw on data already obtained through the TSCA Inventory Update Rule<sup>4</sup>, particularly on new exposure-related data to be provided beginning in 2005.

In certain instances, risk-reduction efforts are targeted at specific chemicals. Foremost among these is the Federal government’s commitment to eliminate the incidence of childhood lead poisoning. Since 1973, we have reduced environmental lead levels by phasing out leaded gasoline and addressing other sources of lead exposure. Since the 1990’s, EPA has focused on reducing children’s exposure to lead in paint and dust through a regulatory framework and by educating parents and the medical community about prevention.<sup>5</sup> EPA’s efforts, combined with those of other Federal agencies, has led to a 50 percent drop in the number of children in the U.S. that have elevated blood levels, to approximately 400,000 children.

EPA is employing a multimedia, cross-Agency strategy to focus on other high-risk chemicals and classes of chemicals. For example, we are working to prevent new PBTs from entering commerce and to reduce risks associated with PBTs, including mercury, that are currently in use or that have been used in the past. In addition, recommendations will be provided to EPA in 2004 from a panel of national experts on asbestos that will assist the Agency in designing strategies to address remaining asbestos risks. We will expand successful pilots to encourage companies to retire from service large capacitors and transformers containing PCBs to meet ambitious new targets for safe disposal by 2008.

## **U.S./Mexican Border**

To reduce environmental and human health risks along the U.S./Mexico Border, EPA employs both voluntary and regulatory measures. Efforts include a series of workgroups that focus on priority issues ranging from water infrastructure and hazardous waste to outreach efforts focusing on communities and businesses in the border area. The programs were initially conceived in a Federal-to-Federal context. Today, it is clear that in both countries, non-Federal governments are the appropriate entities for developing and carrying out much of the work of protecting the border environment. The experience of the last six years has shown U.S. border states as key participants in workgroup activities with similar experience on the Mexico side.

---

<sup>3</sup> U.S. EPA, Office of Pollution Prevention and Toxics, High Production Volume Challenge Program, HPV Commitment Tracking System. Available at <http://www.epa.gov/chemrtk/viewsrch.htm>.

<sup>4</sup> U.S. EPA website, [www.epa.gov/opptintr/iur](http://www.epa.gov/opptintr/iur); Title 40 CFR Part 710, Subpart A

<sup>5</sup> See [www.epa.gov/lead](http://www.epa.gov/lead)

In the past year, all border states have stressed the need for greater decentralization of environmental authority, and in FY 1999, states and the Federal governments agreed to a set of principles that clarify the roles of the governments and advance State and Tribal participation. Under a new environmental plan developed with SEMARNAP (EPA's Mexican counterpart), completed in April 2003, the States and Tribes will play a more substantial and meaningful role in:

- determining how Federal border programs are developed and funded;
- developing regional workgroups that empower border citizens; and
- ensuring that programs devolve from Mexico's Federal government to the Mexican states, with corresponding funding.

### **Ecosystems**

EPA will work with Federal, state, Tribal, local, and private sector partners to achieve our ecosystem objectives. Through continuing emphasis on partnerships and innovation, we will protect and restore coastal water quality through the National Estuary Program and related coastal watershed support. In coordination with the Corps of Engineers, EPA will improve the CWA Section 404 program to achieve no net loss of wetlands by avoiding, minimizing and compensating for losses. With an emphasis on community-based restoration, EPA will contribute to the goal of no net loss of wetlands.

Great Lakes Strategy 2002, developed by EPA and Federal, state, and Tribal agencies in consultation with the public, advances U.S. Great Lakes Water Quality Agreement implementation. Its long-range vision for a healthy natural environment where all beaches are open for swimming, all fish are safe to eat, and the Lakes are protected as a safe source of drinking water, is supported by Lakewide Management Plans (LaMPs) and Remedial Action Plans (RAPs) for Areas of Concern (AOCs).

Work in the Chesapeake Bay is based on a unique regional partnership formed to direct and conduct restoration of the Chesapeake Bay. Partners include Maryland, Virginia and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission; EPA; and participating citizen advisory groups. A comprehensive and far-reaching agreement, Chesapeake 2000, will guide restoration and protection efforts through 2010. The agreement focuses on improving water quality as the most critical element in the overall protection and restoration of the Bay and its tributaries.

EPA's efforts in the Gulf of Mexico represent a broad, multi-organizational partnership based on the participation of business and industry, agriculture, local government, citizens, environmental and fishery interests, Federal agencies, and five Gulf States. The partners voluntarily identify key environmental problems and work at the regional, state, and local level to define and recommend solutions.

### **Brownfields**

Brownfields are defined as real properties, where expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant, or

contaminant. Brownfields include abandoned industrial and commercial properties, drug labs, mine-scarred land, and sites contaminated with petroleum or petroleum products. The Small Business Liability Relief and Brownfields Revitalization Act (SBLRBRA), signed into law in 2002, expands Federal grants for assessment, cleanup, and job training. To encourage revitalization and reuse of brownfield sites, the law limits the legal liability of prospective purchasers, innocent land holders, and contiguous property owners related to brownfield properties. In addition, the law provides for establishing and enhancing state and Tribal response programs, which play a critical role in successfully cleaning up and revitalizing brownfields.

Brownfields grants will continue to provide communities with vital assessment, cleanup, revolving-loan fund, and job-training support. Brownfields assessment grants provide funding to inventory, characterize, assess, and conduct planning and community involvement activities related to brownfields. Brownfields revolving-loan fund grants provide funding for a grantee to capitalize a revolving loan and make subgrants to carry out cleanup activities. Cleanup grants, newly authorized by the Brownfields Law, will fund cleanup activities by grant recipients. Expanded authorities within the new law also address the potential for limited funding for institutional controls, insurance, and health monitoring. EPA will provide limited funding for grants that provide technical assistance, training, and research to Brownfields communities. EPA will also provide funding to create local environmental job training programs, ensuring that the economic benefits derived from Brownfields revitalization efforts remain in the community.

EPA will continue to work in partnership with state cleanup programs to address brownfield properties. The Agency will provide states and Tribes with tools, information, and funding they can use to develop response programs that will address environmental assessment cleanup, characterization, and redevelopment needs at sites contaminated with hazardous wastes and petroleum. The Agency will continue to encourage the empowerment of state, Tribal, and local environmental and economic development officials to oversee brownfield activities and the implementation of local solutions to local problems.

## **Research**

EPA is continuing to ensure that it is a source of strong scientific and technical information, and that it is on the leading edge of environmental protection innovations that will allow achievement of its strategic objectives. The Agency consults a number of expert sources, both internally and externally, and uses several deliberative steps in planning its research programs. As a starting point, the Agency draws input from multi-year plans, EPA's Strategic Plan, available research plans, EPA program offices and Regions, Federal research partners, and peer advisory bodies such as the Science Advisory Board (SAB) and others. Agency teams prioritize research areas by examining risk and other factors such as National Science and Technology Council (NSTC) research, client office priorities, court orders, and legislative mandates. EPA's research program will increase understanding of environmental processes and capabilities to assess environmental risks to both human health and ecosystems.

To enable the Agency to enhance science and research for healthy people, communities, and ecosystems through 2008, EPA will engage in high priority, multidisciplinary research efforts to improve understanding of the risks associated with: 1) human health and ecosystems; 2) climate change; 3) pesticides and toxics; 4) computational toxicology; 5) endocrine disruptors;

6) mercury, and 7) homeland security. Following is a summary of the means and strategies to meet the Agency's long-term objectives in these areas.

EPA's human health research represents the Agency's only comprehensive program to address the limitations in human health risk assessment. Scientists across the Agency will use the measurement-derived databases, models, and protocols developed through this research program to strengthen the scientific foundation for human health risk assessment. In addition, global change, loss and destruction of habitat due to sprawl and exploitation of natural resources, invasive species, non-point source pollution, and the accumulation and interaction of these effects present emerging ecological challenges. EPA will conduct research to strengthen its ability to assess and compare risks to ecosystems, protect and restore them, and track progress toward optimal ecological outcomes.

EPA designs its Climate Change research program in collaboration with the other agencies participating in the Climate Change Science Program (CCSP). This research focuses on assessing potential direct and indirect effects of climate change on human health, air quality, water quality, and aquatic ecosystems; identifying and quantifying the uncertainties associated with those effects; and comparing potential climate change effects with effects caused by other stressors.

Research under the Food Quality Protection Act (FQPA) builds on earlier research to reduce scientific uncertainty in risk assessment. This research will provide data needed to develop refined aggregate and cumulative risk assessments, develop the appropriate safety factors to protect children and other sensitive populations, refine risk assessments, and provide risk mitigation technologies. By 2008, EPA will provide scientific tools that can be used to characterize, assess, and manage risks associated with the implementation of FQPA.

The Agency will conduct additional research on pesticides and toxics that support the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA), designed to enhance the Agency's human health and ecological risk assessment and risk management capabilities. Efforts will include the development of predictive tools used in testing requirements, research on probabilistic risk assessment methods, biotechnology, and other areas of high interest and utility to the Agency.

To enhance the scientific basis and diagnostic/predictive capabilities of existing and proposed chemical testing programs, EPA's Computational Toxicology (CT) Research Program will use *in vitro* or other approaches such as molecular profiling, bioinformatics, and quantitative structure-activity relationships. These alternative approaches, in conjunction with highly sophisticated computer-based models and research results, will greatly reduce the use of animal testing to obtain chemical toxicity information. To support our regulatory mandates, endocrine disruptors research will focus on improving EPA's scientific understanding of exposures to, effects of, and management of endocrine-disruptor chemicals. Research in direct support of EPA's screening and testing programs will evaluate current testing protocols and develop new protocols to evaluate potential endocrine effects of environmental agents. The Agency will also conduct research to determine impacts that endocrine-disrupting chemicals may have on humans, wildlife, and the environment.

A 1997 *EPA Mercury Study Report to Congress* discussed the magnitude of mercury emissions in the United States and concluded that a plausible link exists between human activities that release mercury from industrial and combustion sources in the United States and methylmercury concentrations in humans and wildlife. The Agency will conduct risk management research for managing emissions from coal-fired utilities (critical information for rule-making) and non-combustion sources of mercury; on the fate and transport of mercury in the atmosphere; for assessing methylmercury in human populations; and for developing risk communication methods and tools.

EPA's Homeland Security research program will expand knowledge of potential threats, as well as its response capabilities, by assembling and evaluating private sector tools and capabilities. Preferred response approaches will be identified, promoted, and evaluated for potential future use by first responders, decision makers, and the public. The Agency will be working closely with other federal and outside organizations to fill gaps in this critical research area. EPA's research will focus on preparedness, risk assessment, detection, containment, decontamination and disposal of chemical and biological attacks water systems.

## **STRATEGIC OBJECTIVES AND FY 2005 ANNUAL PERFORMANCE GOALS**

### **Chemical, Organism, and Pesticide Risks**

- Ensure new pesticide registration actions (including new active ingredients and new uses) meet new health standards and are environmentally safe.
- Increase percentage of acre treatments that will use reduced-risk pesticides.
- Decrease occurrence of residues of carcinogenic and cholinesterase-inhibiting neurotoxic pesticides on foods eaten by children from their 1994 to 1996 average.
- Ensure that through ongoing data reviews, pesticide active ingredients, and products that contain them, are reviewed to assure adequate protection for human health and the environment, taking into consideration exposure such as subsistence lifestyles of the Native Americans.
- Standardize and validate screening assays.
- Reduce from 1995 levels the number of incidents involving mortalities to nontargeted terrestrial and aquatic wildlife caused by pesticides.
- Reduce exposure to and health effects from priority industrial and commercial chemicals.
- Identify, restrict, and reduce risks associated with industrial and commercial chemicals.

### **Ecosystems**

- Support wetlands and stream corridor restoration and management and assessment/monitoring of overall wetland health.
- Support projects with the goal of creating, restoring or protecting 2400 acres of important coastal and marine habitats per year in the Gulf of Mexico.
- Assist the Gulf States in implementing watershed restoration actions in priority impaired coastal river and estuary segments.

- Improve Great Lakes ecosystem components, including progress on fish contaminants, beach closures, air toxics and trophic status.
- Improve the aquatic health of the Chesapeake Bay.
- By 2005, working with partners, achieve no net loss of wetlands.

### **Community Health**

- Empower states, Tribes, local communities and other stakeholders in economic redevelopment to work together to prevent, assess, safely cleanup, and reuse Brownfields.
- Through December 2003, the Brownfields program has awarded 552 Brownfields assessment grants, over 171 Brownfields revolving loan funds and 50 cleanup grants, and 66 job training grants.
- Assess 1,000 Brownfields properties,
- Clean up 60 properties using Brownfields funding,
- Leverage \$1.0 billion in cleanup/redevelopment funding,
- Leverage 5,000 jobs.
- Train 200 participants, placing 65 percent in jobs.

### **Science and Research**

- Establish and maintain Centers of Applied Science to provide technical assistance and coordination of applied research activities addressing the latest needs of stakeholders.
- Provide high quality exposure, effects and assessment research results that support the August 2006 reassessment of current-use pesticide tolerances, so that, by 2008, EPA will be able to characterize key factors influencing children's and other subpopulations' risks from pesticide exposure.
- By 2005, provide risk assessors and managers with methods and tools for measuring exposure and effects in children.
- By 2005, provide technical guidance for implementing and evaluating projects to restore riparian zones, so that, by 2010, watershed managers have state-of-the-science field evaluation tools, technical guidance and decision-support systems.
- Through 2005, initiate or submit to external review 28 human health assessments and complete 12 human health assessments through the Integrated Risk Information System (IRIS).

## **HIGHLIGHTS**

### **Chemical, Organism and Pesticide Risks**

#### **Pesticide Registration**

In 2005, the Agency will continue its efforts to decrease the risk to the public from pesticide use through the regulatory review of new pesticides. EPA expedites the registration of reduced risk pesticides, which are generally presumed to pose lower risks to consumers, workers,

the ozone layer, groundwater, and wildlife. These accelerated pesticide reviews provide an incentive for industry to develop, register, and use lower risk pesticides. Additionally, the availability of these reduced risk pesticides provides alternatives to older, potentially more harmful products currently on the market.

Biological agents are potential weapons that could be exploited by terrorists against the United States. EPA's pesticides antimicrobial program is working to help address this threat. Antimicrobials play an important role in public health and safety. EPA is conducting comprehensive scientific assessments and developing test protocols to determine the safety and efficacy of products used against chemical and biological weapons of mass destruction, and registering products as necessary. EPA is also developing a timeline for prioritizing and implementing the tests.

### Tolerance Reassessment and Reregistration

The 1996 Food Quality Protection Act requires the reassessment of existing pesticide tolerances by 2006. A tolerance is the amount of pesticide residue that may legally remain on a food. Pesticide reregistration is a statutory requirement under the 1988 amendments to FIFRA. Under the law, all pesticides registered prior to November 1984 must be reviewed to ensure that they meet current health and safety standards. Many pesticides must be reviewed under both statutes. Additional program requirements and priorities within FQPA include:

- Review of inert ingredients;
- Reform of the antimicrobial review process;
- Transparency of our regulatory decisions;
- Incorporation of aggregate and cumulative risk into our reviews;
- Special protection for infants and children;
- Screening of pesticides for endocrine disrupting effects;
- Enhancements to minor use program; and
- Emphasis on registration of reduced risk pesticides

In the Pesticides program, the main focus, our primary goal, and our largest public commitment is to meet the final statutory goal for completing tolerance reassessment by August 3, 2006. Additional resources of \$4,400,000 are requested in this program to complete food use reregistration work necessary for the Agency to complete tolerance reassessments by 2006 as required by FQPA. These resources will support completion of conventional pesticides, inerts, biopesticides and antimicrobial reviews. The reviews can take several years to complete, therefore FY 2005 is the last opportunity to ensure the Agency has the resources to meet the 2006 FQPA deadline.

In FY 2005, the Agency will continue its review of older pesticides and move forward toward its ten-year statutory deadline of reassessing all 9,721 tolerances. EPA met its first two statutory deadlines under FQPA for tolerance reassessment. The tolerance reassessment process addresses the highest-risk pesticides first. Using data surveys conducted by USDA, FDA and other sources, EPA has identified a group of "top 20" foods consumed by children and matched those with the tolerance reassessments required for pesticides used on those foods. The Agency is tracking its progress in determining appropriate tolerances for these pesticides under the FQPA

standards. In 2005, EPA will continue its effort to reduce dietary risks to children by completing approximately 93 percent (cumulative) of these children's tolerances of special concern.

Through the Reregistration program, EPA reviews pesticides currently on the market to ensure they meet the latest health standards. Pesticides not in compliance with the standards will be eliminated or restricted in order to minimize potentially harmful exposure. FQPA added considerably more complexity to the pesticide reregistration process, lengthening the "front end" of reregistration. These requirements include considering aggregate and cumulative risk in our risk assessments, implementing new processes to increase involvement of pesticide users and other stakeholders, and ensuring a reasonable opportunity for agriculture to make the transition to new, safer pest control tools and practices.

In 2005, EPA will work toward completing 40 Reregistration Decisions<sup>6</sup>, 400 product reregistrations and 1000 tolerance reassessments. The Agency will also continue to develop tools to screen pesticides for their potential to disrupt the endocrine system. Over the longer run, these changes will enhance protection of human health and the environment.

Appropriate transition strategies to reduced risk pesticides are important to the nation to avoid disruption of the food supply or sudden changes in the market that could result from abruptly terminating the use of a pesticide before well-targeted reduced risk equivalents can be identified and made available. In FY 2005, the Agency will continue efforts to reach more farmers and grower groups, encourage them to adopt safer pesticides, and use environmental stewardship and integrated pest management practices. These outreach efforts play pivotal roles in moving the nation to the use of safe pest control methods, including reduced risk pesticides. These programs promote risk reduction through collaborative efforts with stakeholders to use safer alternatives to traditional chemical methods of pest control.

### Endangered Species

Also in FY 2005, the Agency is requesting additional resources of \$1,000,000 for the Endangered Species program. The Agency has been working with the Fish and Wildlife Service and the National Marine Fisheries Service to improve the review process on the potential impact of pesticides on endangered species. Efforts include elevating the level of detail of specificity in risk assessments to more realistically predict risks to endangered species populations; developing a compendium of species biology, food and habitat requirements, listing specification and recovery efforts; ensuring implementation of applicable label provisions; and supporting State and Tribal entities in protecting endangered species. This funding will be used mainly by the states for assisting in the implementation of these improvements.

### Endocrine Disruptors

EPA's Endocrine Disruptors Screening Program (EDSP) was established in response to an FQPA requirement, and to growing concerns in the scientific community about observed adverse effects in wildlife and their potential relationship to human effects. The program's primary objectives are to establish validated assays and scientifically-supported tools for testing

---

<sup>6</sup> Reregistration Decisions include Reregistration Eligibility Decisions [REDs], Tolerance Reregistration Eligibility Decisions [TREDs] and Interim Reregistration Eligibility Decisions [IREDS]).



chemicals for possible adverse effects to the endocrine system. FQPA requires that "validated" assays be used in the Screening Program, but at passage in 1996, available endocrine effects test methods were principally experimental and none had been validated. EPA has spent the past several years standardizing a defined set of assays and establishing their relevance and reliability. The long-term outcomes of the EDSP will be a baseline estimate of the degree of endocrine disruption occurring from environmental chemicals, and a way to measure the risk.

### High Production Volume Challenge Program

EPA's High Production Volume (HPV) Challenge Program, established in cooperation with industry, environmental groups, and other interested parties, works to ensure that critical human health and environmental effects data on approximately 2,800 HPV chemicals are screened and made publicly available. HPV chemicals are defined as industrial chemicals that are manufactured or imported into the United States in volumes of one million pounds or more each year. Through this program, EPA asks industry to voluntarily sponsor HPV chemicals for screening-level testing. Hazard test information on large volume chemicals is now more visible through the HPV website<sup>7</sup>, giving states, regions, and Tribes accessibility and the ability to share critical data and information. EPA's screening efforts should be well under way by FY 2005 and are expected to result in follow up actions on five to ten percent of the chemicals screened.

### Lead Poisoning Prevention Activities

EPA is part of the Federal effort to address lead poisoning and elevated blood levels in children by assisting in, and in some cases guiding, Federal activities aimed at reducing the exposure of children in homes with lead-based paint. In 2005, EPA plans to proceed with a proposed rule on the de-leading of bridges and structures. Also, because much of the remaining incidence of lead poisoning occurs in low-income, urban areas, new public education initiatives will focus on these populations. EPA also plans to step up efforts with the private sector to increase knowledge and ability to work in a lead-safe manner as a normal part of doing business, and plans to ensure that special attention is paid to private sector (non-profit and for-profit) organizations working in high-impact areas.

### Risk Management Plans

Reducing chemical accidents is vital to ensure that communities are not exposed to hazardous materials. The Agency continues its efforts to help states and Local Emergency Planning Committees (LEPCs) implement the risk management plan (RMP) program. In FY 2002, 398 RMP audits were conducted and the Agency continues to make steady progress in this area. In FY 2005, EPA will provide technical assistance grants, technical support, outreach, and training to state and LEPCs. Through these activities, states, local communities and individuals will be better prepared to prevent and prepare for chemical accidents.

---

<sup>7</sup> U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. "High Production Volume (HPV) Challenge Program." Available online at: <http://www.epa.gov/chemrtk/volchall.htm>. Washington, DC. Accessed September 9, 2003.

## **Community Health**

### Brownfields

The Brownfields program is designed to empower states, Tribes, local communities and other stakeholders in economic redevelopment to work together to prevent, assess, safely cleanup, and reuse Brownfields. Through December 2003, the Brownfields program has awarded 552 Brownfields assessment grants, over 171 Brownfields revolving loan funds and 50 cleanup grants, and 66 job training grants. In FY 2005, working with its state, Tribal, and local partners to meet its objective to sustain, cleanup, and restore communities and the ecological systems that support them, EPA intends to assess 1,000 Brownfields properties, clean up 60 properties using Brownfields funding, leverage \$1.0 billion in cleanup/redevelopment funding, leverage 5,000 jobs, and train 200 participants, placing 65 percent in jobs.

## **Ecosystems**

### National Estuary Program

EPA will continue to support protection and restoration efforts in high-priority ecosystems, including those covered by the National Estuary Program (NEP). Key NEP activities will include continued support for assessing status and trends, and implementation activities to restore and protect critical habitat.

### State and Tribal Grants

EPA will continue its grants to states and Tribes to help them protect wetlands made vulnerable by the SWANCC ruling as part of comprehensive programs that will achieve no net loss of wetlands, while also providing grant funding for states and Tribes to assume more decision-making authority in waters that remain subject to the CWA.

### Watersheds

Targeted geographic watershed initiatives are an important component of community-based environmental protection and restoration. In the Great Lakes, EPA will target additional resources to clean up contaminated sediments and strive to reduce PCB concentrations in lake trout and walleye. The emphasis in the Chesapeake Bay will be the restoration of submerged aquatic vegetation (SAV). To achieve improved water quality and restore submerged aquatic vegetation, Chesapeake Bay partners have committed to reducing nutrient and sediment pollution loads sufficiently to remove the Bay and the tidal portions of its tributaries from the list of impaired waters. Continued implementation of core water programs and efforts to address the hypoxic zone will help to restore the waters of the Gulf of Mexico and its tributaries.

## **Research**

### Research for Human Health and Ecosystems

In order to improve the scientific basis for identifying, characterizing, assessing, and

managing environmental exposures that can pose the greatest health risks to the American public, EPA is committed to developing and verifying innovative methods and models for assessing the susceptibilities of sub-populations, such as children and the elderly, to environmental toxins. Since many of the current human health risk assessment methods, models, and databases are based on environmental risks for adults, this research is primarily aimed at enhancing current risk assessment and management strategies and guidance to better consider risk determination needs for children.

In FY 2005, research will identify modes of action by which specific groups of chemicals/pesticides increase cancer or non-cancer health risks as a function of life stage, develop the necessary tools and models to characterize and conduct field studies on exposures to high-priority environmental chemicals in the elderly, and examine effects of pre-existing respiratory disease (e.g., asthma, bronchitis) on response to air pollutants.

EPA will continue to generate exposure measurement and exposure factor data and establish methods to support the development, evaluation, and enhancement of models of aggregate exposures, dose, and effects. This research seeks to understand the key determinants of exposure and risk, improve exposure measurement techniques, and develop critical data on exposure and exposure factors. The results will be used to fill data gaps and reduce reliance on numerous default assumptions that are currently used in the risk assessment process, which will strengthen the scientific foundation for human health risk assessment.

Additional research will provide regulatory decision-makers with models and guidance that will be used for conducting assessments for cumulative exposure and risks to pollutants that pose the greatest health risks to the American public. Activities for FY 2005 and beyond include: 1) developing and refining physiologically-based pharmacokinetic (PBPK) models for using exposure, biomarker, and PK data in risk assessments; 2) examining promising new biomarkers of exposure and effects that can be used in future exposure and epidemiological studies, such as the National Children's Study (NCS); and 3) sponsoring research that will provide a framework for structuring evaluations of the toxicity of complex chemical mixtures for use in human and environmental health assessments.

In order to balance the growth of human activity with the need to protect the environment, it is important to understand the current condition of ecosystems, what stressors are changing that condition, what the effects may be from those changes, and what can be done to prevent, mitigate, or adapt to those changes. In FY 2005, the Environmental Monitoring and Assessment Program (EMAP) will continue to be a major contributor to EPA's environmental indicators report and will be instrumental in improving state contributions to the Agency's bi-annual report to Congress on the condition of the Nation's waters. Baseline ecological condition of Western streams will be determined so that, by 2008, a monitoring framework is available for streams and small rivers in the Western U.S. that can be used from the local to the national level for statistical assessments of condition and change to ecological resources.

Research will also provide technical guidance for implementing and evaluating projects to restore riparian zones, which are critical landscape components for the restoration of aquatic ecosystems and water quality. Research will include: (1) development, demonstration and technical support for monitoring designs, indicators, and interpretive analysis tools to allow

States and Tribes to monitor and report the condition of water resources; (2) development of approaches to identify and test the linkages between probability-based and targeted water quality monitoring programs, landscape characteristics and the probability of water body impairment; (3) development of monitoring methods and decision support systems to improve our ability to identify probable causes of ecological impairment in streams; and (4) development of monitoring approaches to evaluate the effectiveness of programs to manage and restore aquatic resources in reaching performance objectives at site, regional, state and national scales.

The Agency will continue research to assess the impacts of invasive species on U.S. ecosystems, including monitoring for invasive species as part of the Western EMAP program and the National Coastal Assessment, modeling zebra mussel influence on nutrients in Great Lakes Ecosystems, and developing a model for predicting where certain species will invade next.

Research efforts in FY 2005 will continue to build on the Agency's FY 2004 Clear Skies Research Initiative to identify where emerging control technologies and continuous measurement of mercury combustion sources can facilitate or optimize mercury emissions reduction. This research will also give support to the recent Utility Mercury Reductions proposal signed by Administrator Leavitt on December 15, 2003.

EPA will increase efforts to implement information quality guidelines. While the Agency has extensive procedures in place to ensure that the information it disseminates meets high standards, further actions will be taken to ensure that such information is current and fully complies with the guidelines. In FY 2005, the Agency will establish an extramural mechanism to assist Regions in identifying external peer reviewers and securing their advice and assistance.

### Climate Change Research

EPA's Climate Change Research Program supports one of six Administration FY 2005 Interagency Research and Development Priorities - Climate Change Science and Technology. All activities to assess potential impacts of global climate change will be developed and coordinated with the Climate Change Science Program (CCSP). Attention is expected to be given to assessing the potential consequences of global change – including climate variability and change, land use changes, and UV radiation – on air quality, water quality, ecosystem health, and human health. The Agency will also assess potential adaptation strategies for building resilience to global change, while responding to both potential risks and opportunities.

### Research for Pesticides and Toxics

EPA is continuing to build on research launched under the FY 2003 Biotechnology Initiative focusing on plant-incorporated protectants (PIP) crops. In FY 2005, the Agency will deliver a final report outlining the state-of-the-art in tools for monitoring resistance development in the field and the use of target pest ecology to refine Insect Resistance Management strategies, as they are determined in risk assessment practice. This report will focus on data gaps in pest biology, ecology, and population dynamics related to insect resistance development. The report will also lend insight into the development of appropriate tools to identify and measure resistance in field populations of target pests.

## Research for Computational Toxicology

EPA's Computational Toxicology research program supports the Molecular-level Understanding of Life Processes activity, one of the Administration's six FY 2005 Interagency Research and Development Priorities, by employing the use of genomic information and modern computational techniques to enable better management of chemicals that may be present in the environment. In FY 2005, EPA will invest additional resources in computational toxicology (CT) research – 4.0 FTE and \$4,080,093. The FY 2005 CT investment will build upon the current program by accelerating the use of bioinformatics and other computational approaches and apply the program to address other high priority regulatory issues, including the assessment of important classes of environmental agents. In FY 2005, the Agency will begin to develop computational models that could be used to help prioritize anti-microbial agents and inerts for screening and testing requirements.

## **Fellowships**

The STAR fellowship program is the only Federal fellowship program designed exclusively for students pursuing advanced degrees in the environmental sciences and engineering. In FY 2005, the Agency will invest additional resources to support STAR graduate fellowships. This additional investment will extend the purpose of developing high quality scientists across multiple disciplines, including the biological and physical sciences, mathematics, computer sciences, and engineering that will benefit EPA, the private sector, and the entire Nation.

In FY 2005, EPA will also invest additional resources to support Association of Schools of Public Health (ASPH) fellowships. This investment will further extend the important contribution to public health issues that ASPH fellows provide within EPA, thereby helping EPA to better design its programs for human health outcomes. Under a cooperative agreement with the ASPH, eligible fellows are placed in EPA labs, centers, and offices to conduct projects that contribute to EPA's public health mission.

## **Research for Homeland Security**

EPA's Homeland Security research program will continue to conduct critical cross-cutting research to provide near-term, appropriate, affordable, reliable, tested, and effective technologies and guidance. Work will focus on preparedness, risk assessment, detection, containment, decontamination, and disposal of chemical and biological agents used in attacks on water systems. New work will be initiated in the decontamination and clean up of biological agents.

## **EXTERNAL FACTORS**

The ability of the Agency to achieve its strategic goals and objectives depends on several factors over which the Agency has only partial control or influence. Partnerships, voluntary cooperation, international collaboration, industry, economic influences, industrial accidents, natural disasters, litigation, and legislation play critical roles, affecting the Agency's results. Changes in the focus, level of effort, or status of any of these components could affect the success of the Agency's programs under Goal 4. Consequently, EPA must consider these factors as it establishes annual performance measures and targets.

EPA assures the safe use of pesticides in coordination with the USDA and FDA, who have responsibility to monitor and control residues and other environmental exposures. EPA also works with these agencies to coordinate with other countries and international organizations with which the United States shares environmental goals. The Agency employs a number of mechanisms and programs to assure that our partners in environmental protection will have the capacity to conduct the activities needed to achieve the objectives. However, as noted, EPA often has limited control over these entities. Much of the success of EPA programs depends on the voluntary cooperation of the private sector and the public.

Other factors that may delay or prevent the Agency's achievement of the objectives include lawsuits that delay or stop the planned activities of EPA and/or State partners, new or amended legislation, and new commitments within the Administration. Economic growth and changes in producer and consumer behavior could also have an influence on the Agency's ability to achieve the objectives within the time frame specified.

Large-scale accidental releases, such as pesticide spills, or rare catastrophic natural events (such as hurricanes or large-scale flooding) could impact EPA's ability to achieve objectives in the short term. In the longer term, new technology, newly identified environmental problems and priorities, or unanticipated complexity or magnitude of pesticide-related problems may affect the time frame for achieving the objectives or long-term goals. For example, pesticide use is affected by unanticipated outbreaks of pest infestations and/or disease factors, which require EPA to review emergency uses in order to preclude unreasonable risks to the environment. While the Agency can provide incentives for the submission of registration actions such as reduced risk and minor uses, EPA does not control incoming requests for registration actions. As a result, the Agency's projection of regulatory workload is subject to change.

Progress in reducing risks is often highly dependent on industry's response to EPA assistance and initiatives. EPA has little direct control over the pace and volume at which industry develops new chemicals or pesticides; we primarily concentrate on providing industry with tools, such as the PBT Profiler and Pollution Prevention Framework, or incentives, such as the priority review of reduced-risk pesticides, to help screen out high-risk chemicals before they are submitted for EPA review. These tools and incentives have been shown to be effective in gaining cooperation from industry and meeting our long-term and annual goals. In addition, voluntary programs, such as the HPV Challenge Program, operate exclusively on the basis of industry commitments for participation. Industry's response to such initiatives affects the Agency's ability to achieve effective new chemical screening efficiently.

## **Research**

Strong science is predicated on the desire of the Agency to make human health and environmental decisions based on high-quality scientific data and information. This challenges the Agency to perform and apply the best available science and technical analyses when addressing health and environmental problems. Such a challenge moves the Agency to a more integrated, efficient, and effective approach of reducing potential risks. As long as high quality science is a central tenant for actions taken by the Agency, then external factors will have a minimal impact on the goal.

## **EFFICIENCY MEASURES/MEASUREMENT DEVELOPMENT PLANS**

In addition to the newly established efficiency measures, the Office of Pesticide Programs is creating a measures workplan to identify and plan for the development of risk-based outcome measures and indicators for both human health and the environment. The data and information for meaningful pesticides measures require coordination and cooperation with other organizations. The workplan will identify these partnerships and lay out the necessary steps for developing outcome measures and indicators for program goals.

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Healthy Communities and Ecosystems

**OBJECTIVE:** Chemical, Organism, and Pesticide Risks

Prevent and reduce pesticide, chemical, and genetically engineered biological organism risks to humans, communities, and ecosystems.

#### Resource Summary (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
<b>Chemical, Organism, and Pesticide Risks</b>	<b>\$345,298.1</b>	<b>\$364,126.3</b>	<b>\$383,305.4</b>	<b>\$19,179.1</b>
Credit Subsidy Re-estimate	\$905.5	\$0.0	\$0.0	\$0.0
Environmental Program & Management	\$307,746.6	\$327,982.7	\$346,346.5	\$18,363.8
Science & Technology	\$4,939.6	\$5,379.6	\$5,469.4	\$89.8
Building and Facilities		\$6,827.6	\$7,375.2	\$547.6
State and Tribal Assistance Grants	\$23,630.5	\$22,236.0	\$22,367.0	\$131.0
Inspector General	\$1,334.9	\$1,700.4	\$1,747.3	\$46.9
Total Workyears	1,819.1	1,837.0	1,859.8	22.7

#### Program Project (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Children and other Sensitive Populations	\$365.2	\$0.0	\$116.0	\$116.0
Categorical Grant: Pesticides Program Implementation	\$8,492.9	\$8,536.0	\$8,667.0	\$131.0
Pesticides: Field Programs	\$19,119.3	\$23,246.9	\$24,703.2	\$1,456.3
Congressionally Mandated Projects	\$3,929.8	\$0.0	\$0.0	\$0.0
Homeland Security: Preparedness, Response, and Recovery	\$686.3	\$2,327.4	\$2,339.8	\$12.4
Categorical Grant: Lead	\$15,137.6	\$13,700.0	\$13,700.0	\$0.0
Commission for Environmental Cooperation	\$304.4	\$393.8	\$417.1	\$23.3
Pesticides: Registration of New Pesticides	\$42,458.9	\$35,981.6	\$45,310.2	\$9,328.6
Pesticides: Review / Reregistration of Existing Pesticides	\$50,922.0	\$64,314.4	\$60,471.0	(\$3,843.4)
POPs Implementation	\$2,090.9	\$2,224.4	\$2,235.4	\$11.0
State and Local Prevention and Preparedness	\$10,273.0	\$12,508.1	\$12,134.8	(\$373.3)
Toxic Substances: Chemical Risk Management	\$10,464.4	\$9,243.1	\$9,514.2	\$271.1
Toxic Substances: Chemical Risk Review and Reduction	\$42,212.4	\$45,536.2	\$45,878.8	\$342.6
Toxic Substances: Lead Risk Reduction Prgm	\$11,263.0	\$14,832.9	\$11,082.6	(\$3,750.3)



	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Children and other Sensitive Populations	\$365.2	\$0.0	\$116.0	\$116.0
TRI / Right to Know	\$14,687.6	\$14,690.6	\$15,940.9	\$1,250.3
International Capacity Building	\$2,109.8	\$1,541.2	\$1,804.7	\$263.5
Administrative Projects	\$110,780.6	\$115,049.7	\$128,989.7	\$13,940.0
<b>TOTAL</b>	<b>\$345,298.1</b>	<b>\$364,126.3</b>	<b>\$383,305.4</b>	<b>\$19,179.1</b>

## **FY 2005 REQUEST**

### ***Results to be Achieved under this Objective***

A key component of this objective is protecting human health and the environment by identifying, assessing, and reducing the risks presented by the thousands of chemicals on which our society and economy have come to depend. These include the pesticides we use to meet national and global demands for food and the industrial and commercial chemicals ubiquitous in our homes, our workplaces, and the products we use. EPA also addresses the risks associated with potential chemical releases, working in collaboration with local community planners as well as States. Accessible information is critical to good planning and the Agency will focus efforts on improved tools for understanding chemical reporting from facilities. On the international front, reducing transboundary movement of chemicals of concern remains a top priority.

This request highlights EPA's efforts to improve the prevention and reduction of pesticide risks to humans, communities and ecosystems, including protecting the safety of our food supply with special emphasis on the protection of infants and children through regulatory and voluntary means. The Agency will continue partnerships with the United States Department of Agriculture (USDA), the Food and Drug Administration (FDA), the Department of Health and Human Services (HHS), the international Organization for Economic and Cooperation Development (OECD) and others to conduct a smooth transition to safer pest management for food crops. This effort will include engaging and sharing information with stakeholders, to develop and implement transition strategies. EPA will continue to ensure that the best available science is incorporated into the implementation of the Food Quality Protection Act (FQPA).

Some pesticides currently on the market are suspected human carcinogens, neurotoxins or endocrine disruptors and thus may pose significant health concerns, especially to children and other susceptible populations. FQPA set strong safety requirements to protect human health and the environment and provides opportunities to positively impact agricultural production techniques and pesticide user behavior, lessening the overall risk of pesticide use. FQPA further requires that the Agency review pesticides on a periodic basis to ensure that those registered for use meet the most current health standards. Through this process, EPA will ensure that when properly used, pesticides maintain the "reasonable certainty of no harm" standard.<sup>8</sup> The review of existing pesticides through reregistration and tolerance reassessment combined with the availability of safer pesticides through registration continues to improve the risk picture for agricultural and other pesticide uses.

---

<sup>8</sup> FFDCA, Sec. 408 (b)(2)(A)

Attainment of this objective will yield human health and environmental benefits by providing for appropriate screening, testing and risk management responses to chemicals of potential concern, including those specially targeted for risk reduction actions. Expected results include preventing the entry into commerce of chemicals posing unreasonable risk to human health or the environment, and either reducing or effectively managing risks associated with certain existing high production volume chemicals. Particular emphasis will be placed on reducing risks to sensitive populations such as children. EPA expects to leverage public and private resources by working with external partners to achieve efficiencies in program administration and execution.

To reduce or eliminate the potential risks associated with chemical releases, EPA must first identify and understand potential chemical risks and releases. EPA will use information generated by the Emergency Planning and Community Right-to-Know Act and the Spill Prevention Control and Countermeasure program to supplement data on potential chemical risks and to develop voluntary initiatives and activities aimed at high-risk facilities and/or geographic areas. To meet its objective of protecting human health, communities, and ecosystems from chemical risks and releases through facility risk reduction efforts and building community infrastructures, EPA intends to complete 400 risk management plan (RMP) audits in 2005.

The majority of this work will be accomplished through our partnerships. EPA will work with communities to provide chemical risk information on local facilities. The Agency will also assist states and communities in understanding how these chemical risks could affect them and how to reduce those risks and prepare to address and mitigate risks should a chemical release occur.

EPA has set as a strategic target that by 2008, 50 percent of local communities or LEPCs will have incorporated facility risk information into their emergency preparedness and community right-to-know programs. EPA will collect information from LEPCs during 2004 to determine the extent to which they have incorporated such facility risk information into their emergency preparedness and community right-to-know programs. This information will serve as a baseline from which EPA will track progress toward this strategic goal. EPA will work with the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS) to provide LEPCs as Citizen Corps Council. EPA will also continue an initiative to improve and enhance emergency preparedness and prevention in Tribal communities.

EPA will continue to reduce Toxic Release Inventory (TRI) reporting burdens on industry and improve TRI data quality by distributing its new software tool, "TRI Made-Easy (TRI-ME)."<sup>9</sup> The Agency expects to further increase the percentage of TRI reporting forms that are submitted in electronic format. EPA will continue to refine and expand the public's understanding of TRI data by improving data access tools such as the "TRI Explorer." Through these electronic tools, EPA is better positioned to allow more timely access to important facility information which helps environmental decision making and supports first responders in the critical first moments after an accident or security event occurs.

Many human health and environmental pollutants to the American public originate outside the U.S. and can travel easily across borders via rivers, air and ocean currents, and

---

<sup>9</sup> U.S. EPA, Office of Environmental Information, Toxic Release Inventory Website, <http://www.epa.gov/tri>, Date of Access: January 2, 2004.

migrating wildlife. Even in the remote Arctic, industrial chemicals such as polychlorinated biphenyls (PCBs) have been found in significant levels in the tissues of local wildlife. Further, differences in public health standards can contribute to global pollution. A chemical of particular concern to one country may not be controlled or regulated in the same way by another. Harmonization of national standards can assist in reducing global pollution by increasing the number of health and ecological effects any single country may be examining. It may also lower barriers to trade and commerce as countries accept the validity of another's screening methods or other standards.

EPA's international activities under this objective give priority to selected chemicals and certain heavy metals which can persist, bioaccumulate and are toxic (PBTs). PBT chemicals break down slowly in the environment, and elemental metals never degrade. For this reason, PBTs, including persistent organic pollutants (POPs), are very mobile, moving great distances along wind and ocean currents, thereby posing serious risks to human health and the ecosystem in the U.S. and world-wide. PBTs also enter the food chain accumulating in shellfish, fish, birds and animals that are exposed directly or indirectly through their diets. Certain populations are especially vulnerable. Examples include (1) coastal and indigenous populations with subsistence diets heavy in fish or marine mammals, which may contain toxins and mercury, and (2) endangered wildlife which consume and biomagnify PCBs, DDT and other harmful PBTs.<sup>10</sup>

EPA is working to reduce potential risk from PBTs on several international fronts including the following:

- reducing the release and transboundary movement of PBTs;
- reducing the levels of exposure to humans and adverse effects to wildlife that may result from these PBTs;
- assisting additional countries around the world to monitor releases and also manage their use of PBTs.

For each of these efforts, the Agency targets the highest risk or greatest concerns first. For example, PCBs, dioxins/furans, DDT, other POPs pesticides, and mercury pose the greatest concern. Thus, in each negotiated agreement or offer of technical assistance, these substances take priority. In addition, releases from certain countries of these pollutants are more likely to impact vulnerable U.S. populations, such as in the Arctic, and thus receive priority consideration. Examples of such countries include those in the Caribbean and Central America, Russia, China, India and Mexico.

This objective will be accomplished through the following program/projects:

### ***Pesticides: Registration of New Pesticides***

Pesticide licensing involves both registration of new chemicals and the review of older chemicals.<sup>11</sup> Under the Registration program, EPA makes registration decisions about new pesticides after extensive review and evaluation of studies and data on human health and ecological effects. As part of the process, the Agency analyzes data and sets a tolerance level for

---

<sup>10</sup> U.S. Environmental Protection Agency. "PBT Chemical Program: Frequently Asked Questions." Available only through the Internet: <http://www.epa.gov/pbt/faq.htm>.

<sup>11</sup> FIFRA Sec 3; FIFRA Sec 4 (i) (5)

each crop or crop grouping (use) the registrant requests for the pesticide. The pesticide registration program provides numerous benefits, including worker protection, public health assurance, safe food, and protection of the environment from pesticide risk. Additionally, the need for keeping a growing population adequately and safely fed, while at the same time protecting this population from pesticide risk, results in more investment in new science and alternative pest control techniques and technologies. The Registration program gives priority to accelerated processing of reduced risk pesticides which may substitute for products already on the market, thus giving farmers and other users new tools that are better for human health and the environment.

There are many types of registration requests submitted by industry for EPA approval. These include requests for registration of new active ingredients, new pesticides that may simply be new formulations of ingredients already registered (“me-toos”), new uses that add a crop type to the approved uses of the registered pesticide and minor uses for low volume crops.<sup>12</sup>

During the last several years, the Agency has engaged the public and the scientific community in developing and reviewing nine science policies that shape EPA’s approach to screening pesticides. While all of the policies are significant, the requirements in FQPA to consider cumulative and aggregate risk and the ten-fold safety factor for children’s health have important ramifications for risk assessments of many chemicals.

Cumulative risk requires that EPA consider the combined effects of exposures to multiple chemicals sharing a common mechanism of toxicity. Aggregate risk brings issues of residential exposures and drinking water residues into the equation. The extra ten-fold safety factor impacts risk assessments affecting children’s health. A lower factor can be used, “. . . only if, on the basis of reliable data, such margin will be safe for infants and children.”<sup>14</sup>

In FY 2005, the Agency will continue applying its cumulative risk policy to pesticide registration and reregistration decisions. EPA will continue to actively encourage and engage the pesticide industry, farmers and the public to participate in the implementation of FQPA. EPA uses common-sense strategies for reducing risk to acceptable levels while retaining pesticides of the greatest public value, including those employed in minor uses and integrated pest management needs. In FY 2005, EPA will continue to work with the pesticide industry and farmers to explore new pest management approaches and to provide a reasonable phase-out period for canceled pesticides. EPA will also continue its stakeholder consultation process through regular meetings

### **Active and Inert Ingredients<sup>13</sup>**

Pesticide products contain both "active" and "inert" ingredients. The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) has defined the terms "active ingredient" and "inert ingredient," since 1947. An active ingredient is one that prevents, destroys, repels or mitigates a pest, or is a plant regulator, defoliant, desiccant or nitrogen stabilizer. By law, the active ingredient must be identified by name on the label together with its percentage by weight.

An inert ingredient is simply any ingredient in the product that is not intended to affect a target pest. For example, isopropyl alcohol may be an active ingredient and antimicrobial pesticide in some products; however, in other products, it is used as a solvent and may be considered an inert ingredient. The law does not require inert ingredients to be identified by name and percentage on the label, but the total percentage of such ingredients must be declared.

<sup>12</sup> FIFRA Sec 3

<sup>13</sup> FIFRA Sec 2(a); FIFRA Sec 2(m)

<sup>14</sup> FFDCA Sec 408(b)(2)(C)

with the Committee to Advise on Reassessment and Transition (CARAT). The CARAT is an advisory body composed of environmental/public interest groups; pesticide industry and trade associations; pesticide user, grower, processor and commodity organizations; public health organizations, including children's health representatives; Federal agencies; State, local and Tribal governments; academia; consumers and the public established to ensure stakeholder participation in FQPA issues.

States and industry submit requests to EPA for registration actions to meet rapidly changing or emerging needs, including petitions for temporary uses of pesticides to meet emergency conditions, and for research purposes. The Agency allows for the unpredictability of agricultural conditions and pest outbreaks and takes action to meet emerging needs. These actions include issuance of emergency exemptions under FIFRA sec. 18, which allows the use, for a limited time, of a pesticide not registered for that specific purpose. Emergency conditions could include controlling a new pest or the spread of a pest to new areas, or controlling an outbreak of a pest that poses a public health risk, such as the West Nile virus spread by the migration of mosquitoes. FIFRA addresses other special needs, including provisions to register products by States for specific local uses not Federally registered and provisions for experimental use permits (under FIFRA sec.5), which allow pesticide producers to test new pesticide uses outside the laboratory to generate information to apply for amendments to previously approved pesticides (e.g., to reflect label revisions or changed formulations for products already registered).

The Agency and USDA work collaboratively to ensure that minor use registrations receive appropriate support. EPA policy has defined minor uses as pesticide usage on crops grown on less than 300,000 acres. Minor crops account for about 40 percent of the total agricultural sales for the United States. Although minor use pesticides are of major significance in agricultural production and to growers and consumers, they produce relatively little revenue for their manufacturers, considering the cost of maintaining these registrations. Without these small-scale but vital pesticide uses, many of the fruits, vegetables, and ornamentals grown in the United States, worth billions of dollars, could not be produced successfully. In FY 2005, EPA and USDA will continue to work closely to meet the need for newer, reduced risk pesticides registered for minor uses. As needed, the Agency uses the data collected under USDA's Interregional Research Project No. 4 (IR-4) program to establish tolerances for minor uses and provides priority status for registrations for vulnerable crops and minor agricultural uses. IR-4 helps minor crop producers obtain tolerances and registrations for pest control products.

In FY 2005, EPA will continue to provide incentives to the pesticide industry to decrease risk levels from pesticides through the expedited regulatory review of reduced risk pesticides, including biopesticides. Reduced risk criteria include pesticides with reduced toxicity, potential to displace other chemicals posing potential human health concerns, reduced exposure to workers, low toxicity to non-target organisms, low potential for groundwater contamination, lower use rates than alternatives, low pest resistance potential, or high compatibility with integrated pest management and efficacy.<sup>15</sup> The Agency is committed to expediting the registration of additional alternative products and in FY 2005, and expects to register four new conventional reduced risk pesticides.

---

<sup>15</sup> Pesticide Regulation (PR) Notice 97-3, September 4, 1997

EPA is moving deliberately to minimize exposure from currently marketed pesticides with the highest potential to cause adverse effects on human health and the environment. In FY 2005, using the best available science and incorporating stakeholder concerns, EPA will continue to reduce risk from these pesticides through implementation of our decisions in the field, encouraging development, and expediting registration of alternatives. The Agency is especially conscious of the potential impacts on minor crop growers and integrated pest management programs and will continue to work with growers and registrants to focus attention on those situations where limited crop protection alternatives exist. Because FQPA emphasizes the need to protect children from adverse effects of pesticide exposure, EPA is putting emphasis on pesticides used on the foods children commonly eat and, through regulatory means, will continue to seek reduction of pesticide residues on these foods.

Homeland Security continues to be a concern for the public and the Agency. Using CDC's category A list of possible bio-agents as a starting point, the Agency proposes reviewing at least three additional threats in the short-term. Based on experience with anthrax, reviews for other bio-agents would require developing new models and protocols for defining a reasonable standard of efficacy and determining whether substantially different multiple pathways should be addressed.

For the first time as part of the FY 2004 budget process, the Registration Program was rated under OMB's PART process. In the FY 2005 re-evaluation, the program's score was rated at 60 percent. As a result of the evaluation, OMB has recommended that the program develop long term risk-based outcome goals, develop more challenging targets, and assure more independent evaluations are conducted. The program is currently working to address the recommendations.

### ***Pesticides: Review/Reregistration of Existing Pesticides***

The FY 2005 request addresses the review of older pesticides as well as some of the scientific effort involved in identifying potential endocrine disrupting chemicals. The reregistration and the tolerance reassessment programs look at older pesticides and review their safety in light of the latest science and the safety standards mandated by FQPA. In FY 2005, the Agency is requesting additional funding of \$4,400,000 to support meeting the 2006 FQPA statutory deadline. Tolerance reassessment and reregistration reviews involve considerable resources and can take several years to review, making 2005 the last opportunity to ensure EPA has the resources to meet this key deadline.

#### **Kids need Protection<sup>16</sup>**

Children are at a greater risk for some pesticides for a number of reasons. Children's internal organs are still developing and maturing and their enzymatic, metabolic, and immune systems may provide less natural protection than those of an adult. There are "critical periods" in human development when exposure to a toxin can permanently alter the way an individual's biological system operates. Children may be exposed more to certain pesticides because often they eat different foods than adults.

For instance, children typically consume larger quantities of milk, applesauce, and orange juice per pound of body weight than do adults. Children's behaviors, such as playing on the floor or on the lawn where pesticides are commonly applied, or putting objects in their mouths, increase their chances of exposure to pesticides.

Adverse effects of pesticide exposure range from mild symptoms of dizziness and nausea to serious, long-term neurological, developmental and reproductive disorders.

<sup>16</sup> <http://www.epa.gov/pesticides/factsheets/kidpesticide.htm>

Pesticides, by their very nature, are designed to kill pests, so the pesticide regulatory programs must provide a balance on the potential risks resulting from the use of pesticides and the benefits that they provide to determine their acceptability given current scientific knowledge. This acceptability must result in a reasonable certainty of no harm to human health and the environment. This is accomplished through various means, including risk mitigation measures such as label changes and modification in the ways pesticides are applied (use of protective equipment, farmworker re-entry level changes, application rates and frequency, etc.). The regulatory decisions, along with voluntary actions encouraged through education and outreach, provide benefits such as public health safety, safe and abundant food supply, worker safety, and protection of our land and groundwater from pesticide contamination.

During the Reregistration and the Tolerance Reassessment processes, EPA reviews data and studies submitted by registrants in support of the reregistration or the approved use of a pesticide. During this review, the Agency conducts a risk assessment that forms the basis for the Agency's decisions and determines the safe residue (tolerance) that may remain on the food product for a food use pesticide. Risk assessments involve a series of sophisticated analyses of the potential health and environmental effects resulting from exposure to a chemical through various means. As discussed previously, FQPA brought a number of analytic refinements and considerations into these risk assessments.

EPA will continue to review pesticides currently on the market to assure the public of their continued safety. Pesticides found not in compliance will be eliminated or otherwise restricted to reduce harmful exposure. The issuance of a Reregistration Eligibility Decision (RED) summarizes the health and environmental effects findings during the reregistration review of the chemical. These findings determine whether the products registered under this chemical are eligible for reregistration. In 2005, the Agency will complete 32 REDs and an additional eight Interim REDS/Tolerance REDs. EPA plans to complete issuing REDs for food use active ingredients by FY 2006 and for non-food use active ingredients by FY 2008. The review of existing inert ingredients will also be completed by FY 2008.

There are 9,721 tolerances to be reassessed. The final tolerance reassessment deadline requires reassessment of 100 percent of these tolerances by August 2006. In FY 2005, the Agency will continue its reassessment of these tolerances, completing approximately a cumulative 88 percent.

EPA obtains data from a wide variety of sources including USDA surveys on types and quantities of foods people eat, FDA residue monitoring, and United States Geological Survey information on pesticide levels in ground, surface and drinking water. The risk assessment and adjunct analyses determine the outcomes for the tolerances on food. FQPA requires assessment analyses, looking at both aggregate risk and cumulative risk for pesticides with a common mechanism of toxicity. Draft risk assessments go through both scientific peer review and a public review process. The science and policies behind these assessments is complex and the standards developed will impact many pesticides on the market. In particular, the cumulative risk policy will impact chemical groups of pesticides such as organophosphates and carbamates. In FY 2005, as EPA obtains information and obtains new research results, EPA will update and enhance the existing cumulative risk policy as appropriate to make sure risk assessments maintain pace with advancing science.

The cumulative risk policy is affecting the decisions on many older, less expensive pesticides, and resulting changes may have an impact on farmers' available choices in the use of pesticides. As an example, the Agency reviewed a group of higher risk pesticides, the organophosphates, which, because of their wide use, heavily affected the farming community. In 2005, the Agency will review another group of high-risk pesticides, the carbamates. Carbamates are a broad-spectrum, older, less expensive, class of pesticides, and include insecticides used for mosquito control. To address the issues around replacement and review of these widely used pesticides, the Agency and USDA collaborated in development and implementation of a review process which greatly expanded public participation. In 2005, this process will continue to be reviewed, improved and expanded as necessary as we continue our review of other groups of high risk, older pesticides.

Once the reregistration or tolerance reassessment analysis is performed, findings may call for modifications in ways the pesticides are used, in order to reduce risks. Options for risk reduction range from revocation of the tolerance to modifications in use such as farmworker re-entry intervals or application rates. For example, the pesticide could be applied in lower quantities, or less frequently, or at a greater distance from water bodies.

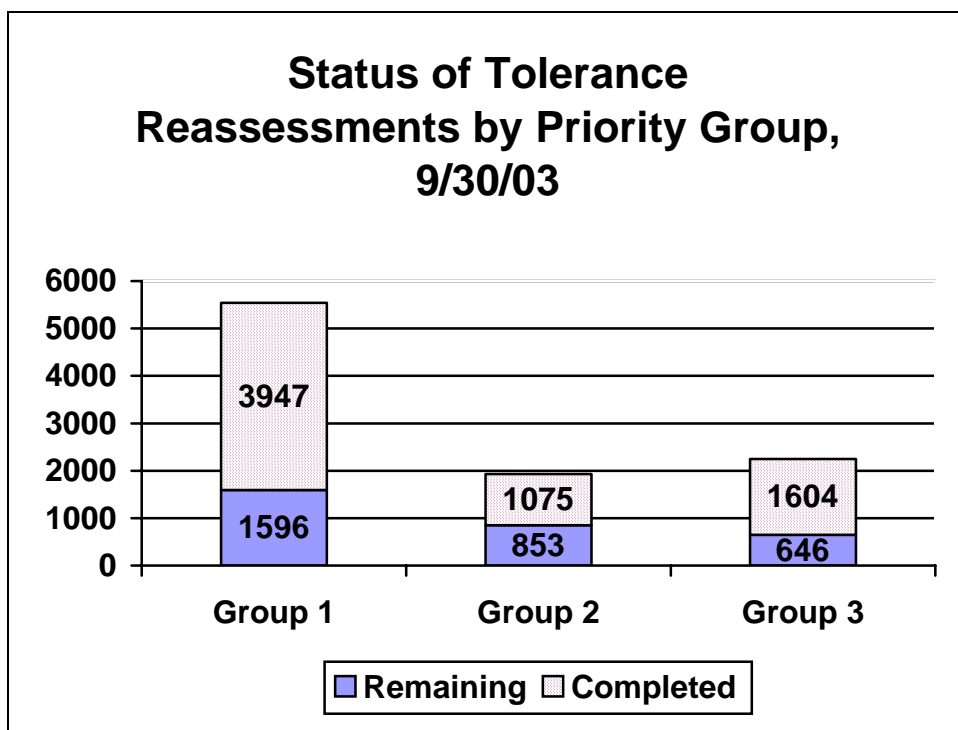
Protecting children's health is of central concern for EPA, and FQPA further emphasized this concern, requiring an additional safety factor to be applied to certain pesticides to adjust for children's higher sensitivity to chemical exposure unless reliable data indicate that a different margin of safety for the pesticide residue is safe for infants and children. As such, EPA has identified and given priority to the tolerance reassessments that affect the top 20 foods eaten by children. The Agency projects completion of 93 percent of this set of tolerance reassessments in FY 2005. Another, more general FQPA approach to reducing risks more quickly is to give priority to the review of tolerances or tolerance exemptions that appear to pose the greatest risk to public health. As a result, EPA divided all pesticide chemicals into three priority groups, published in the Federal Register in 1997.

The highest risk pesticides are in Priority Group 1, which includes organophosphates, carbamates, and probable carcinogens, among other high-risk chemicals, and totals 5,543 tolerances. Group 2 includes some carcinogens and other tolerances, and Group 3 includes the remaining pre-FQPA and post-1984 pesticides. Some tolerances in all groups have been reassessed as part of the work already underway in the reregistration program.<sup>17</sup> Status of reassessments is as follows:

---

<sup>17</sup> EPA FRN "Raw and Processed Food Schedule for Pesticide Tolerance Reassessment; Notices" Aug 4, 1997





Status of Tolerance Reassessment by Priority Group (as of 9/30/03)

- Group 1: 3,947 reassessments completed out of 5,543 ( 71 percent reassessed and 29 percent remaining)
- Group 2: 1,075 reassessments completed out of 1,928 ( 56 percent reassessed and 44 percent remaining)
- Group 3: 1,604 reassessments completed out of 2,250 (71 percent reassessed and 29 percent remaining)

Overall pesticide use appears to be declining as well, based on estimates derived from sales figures, which show about a 15 percent decline between 1985 and 1999. Insecticides as a class tend to be acutely toxic pesticides, and their use is also declining. The total for acre-treatments using pesticides labeled “danger for humans” has gone down by 43 percent between 1997 and 2001.<sup>18</sup>

EPA has made great strides in addressing FQPA requirements and incorporating them into its core programs, including the reregistration of antimicrobials. The Agency has met much shorter review periods for antimicrobials and virtually eliminated the backlog in this area. Antimicrobials are different from other pesticides in that science issues, uses, constituencies and stakeholders differ from agricultural pesticides. Use patterns such as wood preservatives and antifouling paints have raised public health and environmental concerns. Also, for many antimicrobial products, (e.g., hospital disinfectants, swimming pool disinfectants, medical waste treatment products), product performance, i.e., efficacy, is an area where the Agency plays a major regulatory role. These differences mean it is difficult to leverage work on other pesticides

<sup>18</sup> EPA Pesticides Industry Sales and Usage 1998 and 1999 Market Estimates, August 2002, <http://www.epa.gov/oppbead1/pestsales>

to help make progress with antimicrobials. The new resources requested will help support the antimicrobial tolerance reassessments required to meet the FQPA deadline for completing tolerance reassessments by August 2006 and for maintaining the established goal for reregistration.<sup>19</sup>

The Agency will continue to address concerns regarding the efficacy of public health products used to kill microorganisms in hospitals, schools, restaurants, and homes. Sterilizers and disinfectants are increasingly vital to containing infections that are resistant to antibiotics in clinical settings. EPA has developed a comprehensive strategy to improve the regulation of antimicrobial pesticides. Manufacturers are required to submit to EPA detailed and specific information concerning the chemical composition of their product, effectiveness data to document their claims against specific microorganisms and to support the directions for use provided in labeling; labeling that reflects the required elements for safe and effective use; and toxicology data to document any hazards associated with use of the product. EPA has committed resources to ensure that efficacy tests for antimicrobial products are reliable and reproducible and that internal controls are improved to ensure the integrity of data submitted by registrants. In keeping with a major component of the strategy, EPA has greatly improved communications with the public, all levels of government, academia, user communities, industry, health professionals, trade organizations, and independent testing groups. Additionally, the Agency has enhanced and expanded its use of the Internet to educate the general public about the status and direction of the regulation for antimicrobial products.

Another area of FQPA concern is the review of inert ingredients. Of the original 870 tolerance exemptions for pesticide inert ingredients requiring reassessment, more than half still need to be reassessed as part of meeting the FQPA deadline. Review of inert ingredients is crucial because these ingredients could potentially be more toxic than the active ingredients. A portion of the requested additional resources will be targeted to assist in completing these reviews. There are approximately 50 inerts in a backlog that dates back as far as seven years. The Agency has developed a streamlined methodology for evaluating inert ingredients and is implementing the process, but even with these process improvements, increased funding is needed to ensure the Agency can meet the 2006 deadline.

FQPA requires that EPA establish a process for periodic review of pesticide registrations with a goal of completing this process every 15 years. The registrations of pesticides will be updated with respect to current scientific data, risk assessment methodologies, program policies, and effective risk reduction measures. In 2004, EPA will be addressing comments on a proposed rule that outlines this review program, developing final procedural regulations during 2005, and continuing preparations to implement the new program. Implementation tasks include establishing and prioritizing registration review cases and developing internal procedures and information management processes. As the reregistration program draws to a close, the new registration review program will continue to protect human health and the environment using the most current scientific standards.

The Agency continues to ensure that sound science is applied consistently in our pesticide reviews and also that this process includes stakeholder and scientific community input to discuss the policies and their impacts. The Agency has worked extensively with stakeholders

---

<sup>19</sup> FIFRA Sec 4 ( i ) (5)

through the Pesticide Program Dialogue Committee (PPDC) and the Committee to Advise on Reassessment and Transition (CARAT) to ensure transparency in decision-making and a fuller understanding of the implications for growers, producers and the public. EPA will continue to encourage transition to safer pesticides, and to coordinate closely with USDA, industry and commodity groups in finding alternative pest management practices and sharing information.

The FY 2005 President's Budget Request reflects passage of the Pesticides Registration Improvement Act, included in the FY 2004 Consolidated Appropriations Act. The Registration Improvement Act includes an extension of the Maintenance Fees, originally authorized by the 1988 FIFRA amendments, providing funding for the reregistration program, tolerance reassessments, expedited registration and inerts. The Act also authorizes a new voluntary service fee for the expedited processing of pesticide registrations.

Overall, the baseline funding for the Pesticides programs will remain stable, with the exception of two requested increments: \$4.4 million for the completion of tolerance reassessments and reregistration programs, and \$1 million to implement the new Endangered Species requirements. However, due to the new fee structure, there are shifts within appropriated funding requests for specific program areas.

### ***Pesticides: Field Programs***

#### ***Categorical Grant: Pesticides Program Implementation***

In 2005, EPA will continue its partnership with States and Tribes in educating workers, farmers and employers on the safe use of pesticides and worker safety. The Certification and Training (C&T) and the Worker Protection (WP) programs protect agricultural workers, pesticide applicators/ handlers, employers, and the public from the potential risks posed by pesticides.



The Worker Protection regulations offer protection to over three and a half million people who work with or around pesticides at more than 560,000 workplaces.<sup>20</sup> The regulations include provisions for routine safety training for all agricultural workers and pesticide handlers, and other provisions designed to reduce or prevent pesticide exposure to pesticide workers. The C&T program assures the competence of private and commercial applicators in handling and applying pesticides through certification and education/training programs. All applicators of restricted use pesticides must be certified as competent and be recertified every three to five years through continuing education or other means.<sup>21</sup>

<sup>20</sup> 40 CFR Part 170

<sup>21</sup> FIFRA Sec 3(d), 11, 22, 23

EPA will continue efforts to educate the public in the proper use of pesticides to prevent household and other pesticide misuse. EPA will focus its efforts in rural and urban areas with poor communities where there are disproportionate public health risks to residents, especially children. EPA will employ product stewardship with manufacturers and distributors, and work with States to improve their certification and training programs. EPA continues to improve consumer product labels, communicate proper handling of pesticide containers and their distribution, and direct enforcement activities to prevent improper sales and use of agricultural pesticides.

Regional offices will continue to support the development and implementation of FQPA transition projects with commodity groups and provide strategic and technical assistance on project design, implementation, and evaluation. Due to variations in crops, pests and weather patterns in different locales, a regional approach will be employed to address local needs. This approach will rely on partnerships between EPA, state agencies (Departments of Agriculture, Departments of Environment and Land Grant Universities) and agricultural groups (farm bureaus and major commodity groups). The first stage of this Strategic Agricultural Initiative evaluates current farm operations including pesticide risk reduction technologies, Integrated Pest Management (IPM) techniques and Best Management Practices (BMPs), soil and water conservation, handling and storage of hazardous materials, and solid waste management. Model or demonstration sites are used for purposes of outreach, education and compliance assistance for other agricultural operations throughout the State.

In FY 2005, EPA, in cooperation with USDA, will continue to provide information about pest control options, organize and deliver pest management educational programs for agricultural producers, consumers, and other stakeholders on reduced risk pesticides and alternative pest control methods. EPA will also continue to support the development and evaluation of new pest management technologies through IPM and Pesticide Environmental Stewardship Program (PESP).

#### **Promoting Use of Integrated Pest Management in Schools**

One of EPA's highest priorities is protecting children's health from unnecessary exposure to pesticides that are used in their schools to control pests. EPA is encouraging school officials to adopt Integrated Pest Management (IPM) practices to reduce children's exposure to pesticides while maintaining effective control of pests.

A goal of the IPM in Schools Initiative is to efficiently integrate an IPM program with the school's existing pest management plan and other school management activities. School management activities such as preventive maintenance, janitorial practices, landscaping, occupant education, and staff training are all part of an IPM program. The following steps are required to develop an IPM decision network:

- Developing an official policy statement for school pest management
- Designating pest management roles
- Setting pest management objective for sites
- Inspecting, identifying and monitoring for incipient pest populations
- Setting action thresholds
- Applying IPM strategies
- Evaluating results and record keeping

EPA is helping schools understand and implement IPM through the distribution of printed publications, awarding grants to start IPM programs, offering workshops and courses and providing guidance and assistance through partnerships with universities and national associations.

The PESP furthers risk reduction by promoting the use of safer alternatives to traditional chemical methods of pest control. PESP, through voluntary partnerships with pesticide users, also seeks to reduce both health and environmental risks while incorporating pollution prevention strategies. Partners and supporters of PESP play vital roles in developing common sense approaches to pesticide risk reduction, including use of IPM, biological and cultural controls, and weather and pest data decision models. PESP supporters have an interest in risk reduction because they use agricultural products or represent groups affected by pesticides.

Although this program began in 1994 prior to FQPA, its focus is consistent with the statute's goals and EPA's strategic plan in reducing risk in agricultural and nonagricultural settings. PESP grants provide assistance to partners, and supporters, in developing and implementing risk reduction strategies. EPA will continue to coordinate with USDA and other Federal Agencies in encouraging and supporting IPM practices, fostering the managed use of an array of biological, cultural, mechanical, and chemical pest control methods that achieve the best results with the least adverse impact to the environment.

The Endangered Species Protection Program (ESPP) is built on consultation and cooperation between the United States Fish and Wildlife Service (FWS), EPA Regions, States, and pesticide users. The Endangered Species Act is intended to protect and promote the recovery of animals and plants that are in danger of becoming extinct. Under the Act, EPA must ensure that use of pesticides will not result in harm to species listed as endangered and threatened, or harm habitat critical to those species' survival. Additional resources are requested to support efforts in FY 2005 to improve and formalize the consultation process and make the program more efficient and effective. Some of this additional funding will be used by the states for assisting in the implementation of these improvements.

In order to protect listed species from harm resulting from pesticide use, the Agency will continue to do the following:

- Use sound science to assess the risk of pesticide exposure to listed species. In 2005, EPA will continue to work with industry to improve databases of endangered species information. The database will help ensure consistent consideration of endangered species as pesticides are reviewed.
- Implement use limitations through appropriate label statements; develop county bulletins containing maps of species' locations and pesticide use limitations; and provide a toll-free telephone number to assist users in determining whether they need a bulletin and where to obtain one.
- Encourage individual States and Tribes to develop their own endangered species protection plans where needed, to meet the program's goals.

Reducing the risks of pesticide exposure is a particular challenge in Indian Country. Native Americans may consume different foods than the average American, eating more or different types of wild game and fish. They may also engage in unique, culturally linked activities, live in different types of housing, have different mobility patterns, and otherwise encounter unusual chemical exposure opportunities. Their patterns of exposure may not be adequately represented in the general public dietary or other exposure information gathered by USDA, FDA or the registrant. In FY 2002, EPA launched a pilot project to modify Lifeline software (a risk assessment tool) to enable it to capture these unique exposure risks for Tribes in

two biogeographical areas of the country. The Agency is now beginning its evaluation of the results of the pilot and determining whether work should proceed to expand the range of the model. Additionally, the Agency will foster greater Tribal awareness of pesticide health hazards, and provide training to Tribal members on managing pesticides and pesticide risks. Outreach and education tools must be matched to Tribal needs.

EPA will continue to assist farmers in transitioning to reduced risk pesticides and pest management practices as the Agency continues to comply with FQPA and restricts or removes older, riskier pesticides from the market. Agriculture's effects on surface water quality, groundwater quality, air quality, food quality, habitat, and other areas of concern can be significant, thus a series of complex regulatory and non-regulatory control measures addressing media-specific environmental issues is needed. The Agency must simultaneously consider numerous risks associated with the agricultural use of pesticides, including pesticides application spray drift, chemical runoff, pesticide disposal, groundwater protection, worker protection, and pesticide application techniques, in order to promote an integrated approach to pollution prevention.

EPA has several objectives and programs to help protect human health and the environment. These efforts include:

- Protection of agricultural workers;
- Certification and training of pesticide applicators;
- Protection of endangered species and non-target species such as benign insects, fish and wildlife, and ecosystems from the harmful effects of pesticides;
- Development and implementation of environmental stewardship and integrated pest management pollution prevention strategies; and
- Protection of our nation's groundwater from pesticide contamination.

The Agency will establish a more consistent EPA presence as a partner with USDA and other organizations in addressing environmental issues associated with agriculture, and a more consistent Agency voice in the national dialogue on agriculture.

### ***Toxic Substances: Chemical Risk Review and Reduction***

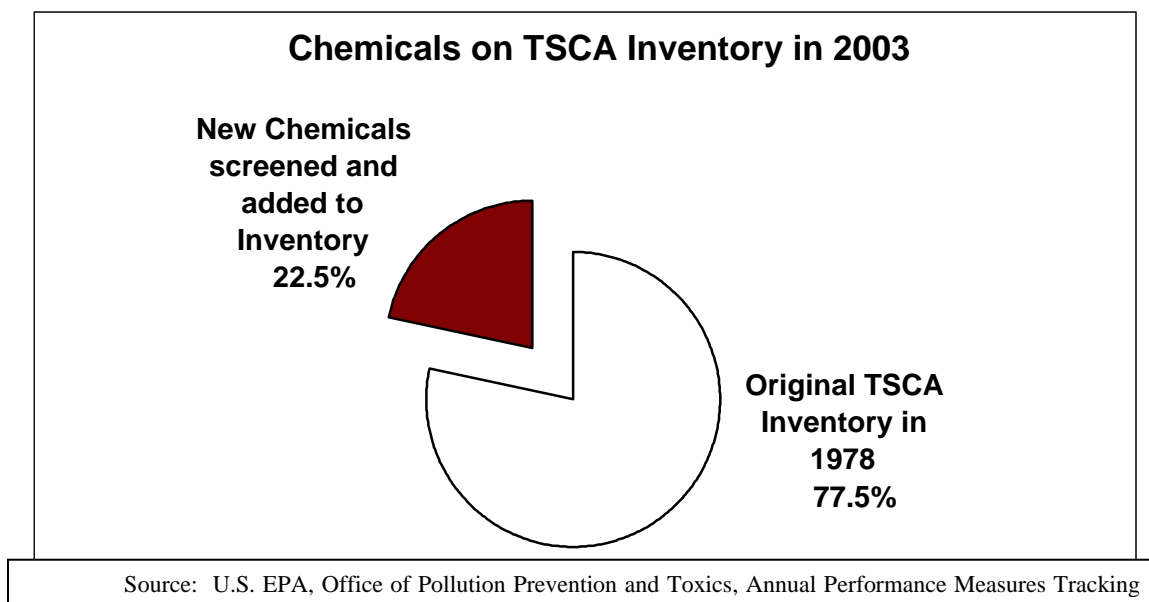
New Chemicals Program: The Toxic Substances Control Act (TSCA) of 1976<sup>22</sup> is the Agency's basic chemical risk assessment and risk management statute, covering production, importation, processing, distribution, and use of commercial/industrial chemicals in the United States. TSCA requires EPA to review a chemical or microorganism before it is manufactured commercially or imported (i.e., a "new" chemical) to determine whether it can be handled and used safely. If the Agency determines that an unreasonable risk may be posed to people or the environment, EPA can block the chemical's entry into commerce or establish control measures to ensure the chemical's safety in the marketplace.

At the core of TSCA is the Premanufacture Notice (PMN) Review. TSCA requires companies planning to manufacture or import a new chemical substance into the U.S. to submit a premanufacture notice to EPA for review and action. During PMN review, the Agency assesses

---

<sup>22</sup> Toxic Substances Control Act, *Public Law* 94-469, October 11, 1976.

within 90 days whether the new chemical poses unreasonable risk to workers and/or the general population and whether action is needed to prevent or reduce that risk. The PMN program is the Agency's first and foremost line of defense against potential hazards from chemicals newly introduced or imported.



Since 1979, EPA has reviewed more than 40,000 PMNs, approved approximately 36,000, and taken actions to control risks for an estimated ten percent of these chemicals and microorganisms.<sup>23</sup> A majority of the chemicals currently in commerce, however, predate the PMN review requirements, a considerable number of commercial chemicals entered U.S. commerce subsequent to the enactment of the PMN requirements, and thus have undergone PMN review. The PMN-reviewed chemicals are depicted as new chemicals added to the TSCA inventory on the chart provided above.

As the preceding chart suggests, there has been substantial progress in the New Chemicals Program (NCP) since its inception in 1978. In 2003, there were potentially 81,248 chemicals in commerce; 18,248 of these chemicals, or 22.5 percent, had gone through the TSCA Premanufacture Notice review process and entered into commerce following submittal of a Notice of Commencement of Manufacturing.<sup>24</sup> These chemicals have been assessed for risks, and controls are in place as necessary.

As part of its continued interest in increasing efficiency through innovative processes and voluntary partnerships, the Agency has launched "Sustainable Futures," a program designed to help industry develop new chemical substances that are sustainable both economically and environmentally.<sup>25</sup> Regulatory relief is offered to participating companies submitting qualifying new chemical substances. Sustainable Futures advances pollution prevention by encouraging risk screening of new chemicals at the earliest stages of R&D. Sustainable Futures offers

<sup>23</sup> U.S. EPA, Office of Pollution Prevention and Toxics, TSCA New Chemicals Program Annual Report and the TSCA New Chemicals Program Website <http://www.epa.gov/opptintr/newchems/accomplishments.htm>

<sup>24</sup> U.S. EPA, Office of Pollution Prevention and Toxics, Annual Performance Measure Tracking Files

<sup>25</sup> 67 *Federal Register* 76282. December 11, 2002. "Sustainable Futures" U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. Pollution Prevention (P2) Framework Web Site, <http://www.epa.gov/oppt/p2framework/>. Washington, DC. Accessed September 9, 2003.

companies' computerized chemical risk screening tools that can be used to identify and commercialize environmentally preferable new chemicals. A combination of training and technical assistance in the use of EPA risk screening tools and regulatory incentives (i.e., decreased time to market) will be used to promote the development of safer chemicals. The Sustainable Futures program makes use of the Persistent, Bioaccumulative, Toxic (PBT) Profiler, which is a screening-level tool that estimates persistence, bioaccumulation, and chronic fish toxicity.<sup>26</sup> Highly praised by industry and environmentalists, over 24,000 chemical-specific PBT analyses were performed between September 2002 and August 2003. Use of the profiler informs decision-making at early stages of new chemical development and promotes the selection and application of safer chemicals and processes, thus reducing product development costs and improving environmental performance.

EPA has concluded a successful pilot project with the Kodak Corporation using methods advanced through Sustainable Futures. Kodak's Final Project Agreement (FPA) report indicated that "...Kodak has reviewed materials that were possible candidates for commercialization using the P2 Framework. Of the materials that could have been commercialized, 24 percent were dropped early in the product development process. All PMNs submitted to EPA were cleared by the Agency through their standard review process." On the heels of this success, a Federal Register notice was issued in December 2002 to expand training efforts to a nationwide pilot program.<sup>27</sup> Training has been initiated and informal discussions with trade associations indicate the potential to leverage external resources to increase the pace of training potential PMN submitters. Sustainable Futures PMNs are beginning to be submitted.

Another effort to create efficiencies in the marketplace while maintaining environmental protection involves our international partners, particularly Europe and Canada. EPA has been engaged in discussions with industry representatives and our international governmental partners to institutionalize some form of New Chemicals Review "harmonization" program that, if successful, will allow for one government's new chemical hazard reviews to be routinely shared and accepted by other governments. If this program is successful, it will lead to seamless information exchanges, and accelerate innovation by allowing faster introduction of newer, safer chemicals into international commerce. To this end, in a cooperative program with industry, EPA has been sharing selected new chemical reviews of substances with Canada as well as the Organization for Economic Co-operation and Development (OECD) for several years now. The Agency has also been providing information on our review process for new chemicals to the European Community as they consider proposed new legislation on new and existing chemicals, known as Registration Evaluation and Authorization of Chemicals (REACH).

The Agency will prepare a plan for the development of annual performance goals and measures for the New Chemicals Program (NCP) so that progress towards the relevant strategic targets can be measured and monitored. Historically, the NCP has relied primarily on output-based measures to monitor and assess results obtained through the NCP (for example, tracking the number of chemicals that go through the NCP process). In 2005, we will apply new annual goals and measures (currently under development) that will be based on the prevention/avoidance of unreasonable risk so as to allow better evaluation of the program's effectiveness in meeting its strategic targets. In addition, we will apply one or more efficiency

---

<sup>26</sup> U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. PBT Profiler Web Site, <http://www.PBTProfiler.net>. Washington, DC. Accessed September 3, 2003.

<sup>27</sup> 67 FR 76282, December 11, 2002



measures for determining whether the desired NCP results are being achieved at reduced cost relative to the benefits of protecting the American people from risk to human health and the environment.

For the first time as part of the FY 2004 budget process, the New Chemicals Program (together with the Green Chemistry Program) was evaluated under the Program Assessment Rating Tool (PART) budget process. The program demonstrated results, receiving an “adequate” rating. During the FY 2005 re-evaluation, the New Chemicals Program scored higher in the Program Planning and Results/Accountability sections of the PART, resulting in a “moderately effective” rating because of increased results demonstrated.

These advancements were achieved through work initiated by the New Chemicals program to develop a long-term outcome measure on risks to the public avoided and an efficiency measure to track costs per new chemical review. This was done in response to the FY 2004 PART experience but also in conjunction with the EPA Strategic Plan revision effort. The New Chemicals program is continuing its efforts to improve performance measurement in response to FY 2005 PART findings by developing long-term and associated annual efficiency measures. The program is also establishing targets and timeframes for measures, considering an independent evaluation of the program, and proposing appropriations language to remove the cap on fees in TSCA for PMN reviews.

Existing Chemicals Program: Before enactment of TSCA in 1976, there was no comprehensive Federal statute requiring the review of new chemicals but there were already a large number of chemicals in use. Therefore, relatively little information exists on the potential hazards of many chemicals that are in commerce and found in everyday household products and industrial processes. A major priority for the Agency is improving the amount of human health and environmental effects data on industrial chemicals in commerce that were not screened under the PMN program and ensuring public access to the information. Fostering the public availability of risk screening information will allow States, communities, industry, and the public to act on their own and in concert with EPA to reduce potential risks posed by these chemicals.

To help carry out this strategy, EPA developed the Risk Screening Environmental Indicators model (RSEI), which is used to assess the relative impacts of releases of toxic chemicals by combining estimates of toxicity, exposure level, and the exposed population to provide risk-related comparisons (i.e., indexes of relative risk).<sup>28</sup> RSEI performs such calculations in a matter of minutes or hours, including various screening-level analyses, saving stakeholders time and resources. Nonetheless, identifying and prioritizing risks is an ongoing challenge. The High Production Volume Chemical program, described in more detail below, is one effective way to review a greater number of chemicals than ever before, but many other chemicals will remain unexamined.

To assist in finding feasible strategic approaches to this issue, the National Pollution Prevention and Toxics Advisory Committee (NPPTAC) was established in September 2002 in accordance with the provisions of the Federal Advisory Committee Act (FACA<sup>29</sup>). The NPPTAC will support EPA in performing its duties and responsibilities under the Toxic

---

<sup>28</sup> U.S. EPA, RSEI website location, [http://www.epa.gov/oppt/rsei/whats\\_rsei.html](http://www.epa.gov/oppt/rsei/whats_rsei.html)

<sup>29</sup> 5 U.S.C. App.2 § 9 (c)

Substances Control Act, the Pollution Prevention Act, and other applicable statutes. The objectives of the NPPTAC are to provide advice and recommendations in areas such as:

- Risk assessment/management;
- Risk communication;
- Pollution prevention in chemical management and prevention programs; and
- Coordination with other Federal, State and Tribal government agencies, as well as non-governmental organizations.

In this increasingly global economy, chemical risk identification and risk management is a responsibility of all. EPA has been deeply involved in international efforts to manage Persistent Organic Pollutants (POPs) and select heavy metals (e.g., mercury).<sup>30</sup> The POPs protocol in turn helped to establish the foundation for the negotiation (under the auspices of the United Nations Environment Program, or UNEP) of a legally binding global convention on POPs. Another important international agreement, the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was signed in 1998. Now that 50 countries have ratified it, the PIC Convention will come into force on February 24, 2004. The PIC Convention establishes a network for information exchange and provides opportunities for importing countries to make informed decisions when importing certain chemicals that have been subject to control actions in other parts of the world.

Establishing compatible information collections, databases and dissemination vehicles are indispensable to effective international chemical management, and can provide a streamlined cost-savings for industry, reducing barriers to trade. Through HPV data collection efforts, the EPA has made hazard data available via both domestic and international program efforts, namely the U.S. Chemical Right-to-know (ChemRTK) and OECD Screening Information Data Sets (SIDS), respectively.

It is also under the OECD SIDS Program in which the EPA is able to review and comment on EU risk assessments prior to publication. In order to promote data collection, data sharing and standardization, EPA is endeavoring to ensure that the results of these efforts and their associated products (dossiers, robust study summaries, screening level assessments and hazard profiles) are compatible with the remaining OECD member countries' equivalents to include Europe in these and similar programs. Testing protocols for chemicals are another opportunity for enhancing trade while ensuring environmental protection. To this end, EPA has published about 100 test guidelines, a third of which have been harmonized with OECD requirements.<sup>31</sup> The U.S. is one of the 30 OECD member countries that participate in the development of OECD Test Guidelines. On average (over the last decade or so), approximately five new and/or revised OECD test methods may be finalized and released in any given year.

For the first time as part of the FY 2004 budget process, the Existing Chemicals Program was evaluated under OMB's Program Assessment Rating Tool process. In the FY 2005 re-evaluation, the program increased its score by over 50 percent and advanced to a rating of results

---

<sup>30</sup> Under the United Nations Economic Commission for Europe's Convention on Long-Range Transboundary Air Pollution (LRTAP).

<sup>31</sup> [http://www.oecd.org/document/22/0,2340,en\\_2649\\_34377\\_1916054\\_1\\_1\\_1\\_1,00.html](http://www.oecd.org/document/22/0,2340,en_2649_34377_1916054_1_1_1_1,00.html)

demonstrated of “adequate.” The program’s scores increased dramatically in the Purpose and Design, Strategic Planning, and Results sections of the tool.

In response to the FY 2004 PART experience as well as the Agency’s Strategic Plan revision efforts during FY 2003, the program worked to establish better long-term and annual performance measures. The success of these preliminary efforts in setting ambitious targets and demonstrating results has been illustrated in the increased PART score for FY 2005. Most notable was the creation of a long-term outcome-focused measure examining the percent reduction of chronic human health risk from environmental releases of industrial chemicals in commerce. The Existing Chemicals program is continuing its efforts to improve performance measurement in response to FY 2005 PART findings by developing long-term and associated annual efficiency measures.

High Production Volume (HPV) Challenge Program Ensuring Public Access to Chemical Hazard Information: Of the 80,000 chemicals on the TSCA inventory, only 22 percent went through Pre-Manufacturing screening. As discussed, little is known of the vast majority of chemicals present in our daily lives. The HPV Challenge Program focuses on the chemicals produced in high volumes.<sup>32</sup> Established in cooperation with industry, environmental groups, and other interested parties, the HPV Program is working to ensure that critical human health and environmental effects data on approximately 2,800 HPV chemicals are made publicly available. HPV chemicals are defined as industrial chemicals that are manufactured or imported into the United States in volumes of one million pounds or more each year. Through this program, companies and consortia voluntarily sponsor HPV chemicals for screening-level testing. Hazard test information on large volume chemicals is posted on the HPV website, giving States, regions, and Tribes accessibility and the ability to share critical data and information.

EPA recognizes the importance of investigating HPV chemicals on a worldwide basis by working closely with the Organization for Economic Cooperation and Development (OECD). The Agency continues to develop risk analysis tools that improve information sharing and data collection regarding high production volume chemicals. The Screening Information Data Sets (SIDS) contains information on physical characteristics, and environmental fate and pathways, as well as ecotoxicological and toxicological data.

EPA continues to undertake activities targeted at receiving and reviewing the quality of HPV chemical hazard data, and reviewing the plans of sponsor companies for developing new test data. As of December 12, 2003, a total of 2,231 HPV chemicals had been sponsored under the program, and 331 companies and 97 consortia were sponsoring chemicals. Two hundred sixty-seven test plans covering 1,064 chemicals have been received.<sup>33</sup> The Agency has worked with industry and environmental groups to minimize the need for animal testing. During FY 2004, EPA plans to examine the status of “orphan” chemicals (those not voluntarily sponsored by industry) in the HPV program and will develop actions to secure needed data.

---

<sup>32</sup> U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. "High Production Volume (HPV) Challenge Program." Available online at: <http://www.epa.gov/chemrtk/volchall.htm>, Washington, DC. Accessed September 9, 2003.

<sup>33</sup> U.S. EPA, Office of Pollution Prevention and Toxics, High Production Volume Challenge Program, HPV Commitment Tracking System. Available at <http://www.epa.gov/chemrtk/viewsrch.htm>.

EPA is committed to making information obtained through the HPV program broadly accessible to the public, both domestically and internationally. As one step in meeting that commitment, the Agency has posted HPV data on the EPA website.<sup>34</sup> In FY 2002, the HPV program made screening level health and environmental effects data on 843 chemicals available to the public and for FY 2003 the total was 1,080.<sup>35</sup> EPA expects that test plans for 1,129 chemicals will be received and reviewed by EPA by year-end 2004.

In 2004 and 2005, EPA efforts will focus on making the HPV data more accessible to the public through more efficient data systems that meet stakeholder needs for analysis or compilation. Extensive website enhancements will allow users to search for comprehensive data related to sponsored chemicals. Technical guidance will enhance data use by States, local governments, the chemical industry and others. EPA will also begin to screen submitted data and identify chemicals of potential concern that may require additional work, currently anticipated to involve five to ten percent of screened chemicals.

Voluntary Children's Chemical Evaluation Program (VCCEP) Ensuring Public Access to Chemical Risk Information: Children, with their developing brains and bodies, can be more vulnerable to potential adverse effects of chemical exposures. EPA's Voluntary Children's Chemical Evaluation Program (VCCEP) focuses on assessing the potential health risks associated with chemicals to which children are exposed.<sup>36</sup> Through VCCEP, companies that manufacture and/or import chemicals to which children have a high likelihood of exposure voluntarily sponsor data on the chemicals. Initially, thirty-five companies and ten consortia volunteered to sponsor 20 chemicals. As part of their sponsorship, companies collect and/or develop health effects and exposure information on their chemical(s) and integrate that information into a risk assessment. A "Data Needs Assessment" is conducted, which determines whether it is necessary to expand the information we have on the risks these chemicals may pose to children.

Assessments addressing the risks to children of four separate chemicals (acetone, decabromodiphenyl ether, vinylidene chloride, pentabromodiphenyl ether) were developed in FY 2003. An independent outside party held peer consultation meetings for all four assessments. The independent outside party will post the final summary of the peer consultation meetings on its website so they will be available to the public. In 2005, follow-up actions for the chemicals assessed in 2003 will be undertaken if warranted.

Assessments addressing the risks to children of five additional chemicals will be reviewed by peer consultations in FY 2005. EPA has developed a process for providing the Agency's response to the data needs section of the sponsor's assessments. This includes an Agency review by other interested program and regional offices.

TSCA Inventory Update Rule Amendment (IURA): The TSCA Inventory Update rule requires the submission of basic data - companies, production sites and volumes - on approximately 9,000 organic substances every four years, taken from a list of more than 76,000

---

<sup>34</sup> U.S. Environmental Protection Agency, Office of Pollution Prevention and Toxics. "High Production Volume (HPV) Challenge Program." Available online at: <http://www.epa.gov/chemrtk/volchall.htm>, Washington, DC. Accessed September 9, 2003.

<sup>35</sup> U.S. EPA, Office of Pollution Prevention and Toxics, High Production Volume Challenge Program, HPV Commitment Tracking System. Available at <http://www.epa.gov/chemrtk/viewsrch.htm>.

<sup>36</sup> U.S. EPA website, <http://www.epa.gov/chemrtk/vccep/index.htm>

chemicals on the TSCA Inventory of Chemical Substances.<sup>37</sup> A recent amendment will also facilitate the collection of data on inorganic chemicals, beginning in 2006.<sup>38</sup> There have been five IUR collections of basic chemical manufacturing information since its beginning in 1986. This information has proved invaluable to EPA programs, and the IUR databases are often the first data sources searched when investigating a chemical. Recent amendments expand the information collected to include manufacturing exposure-related information on about 9,000 organic and inorganic chemicals and processing and use information on about 3,000 organic chemicals.<sup>39</sup>

The TSCA Inventory Update Rule Amendments (IURA) address deficiencies in the availability of exposure-related information on a set of relatively higher production volume chemicals from among the chemicals listed on the TSCA Inventory. Basic exposure information is critical if the Agency is to identify potential risk reduction opportunities and target resources more efficiently. The amended rule provides the EPA with a vehicle to obtain updated information related to the potential human and environmental exposures of chemical substances listed on the TSCA inventory.

A series of stakeholder training sessions will be conducted in 2004 and 2005 to familiarize the regulated community with the amended rule and to instruct persons reporting information to the Agency on the requirements and interpretation of the new rule. In addition to an instruction manual, a question and answer document and an interactive online instruction manual will be developed to assist persons who will report information under the rule. By 2005, additional amendments to the Inventory Update Rule will clarify the rule and respond to commitments included in the 2003 amendment. EPA will complete a petition review pilot project and will begin to review petitions for inclusion in the IUR partial exemption.

By requiring persons reporting under the rule to collect and report information on the use of chemical products they manufacture and import, the rule will alert the regulated community to possibilities to reduce exposure to chemical substances. Additional information collected by the Agency will facilitate selection of chemical substances for more in-depth evaluation and efforts to regulate chemicals of concern, reduce the consumption of chemical substances, and encourage the use of safer chemical substitutes. EPA will also continue its effort in the IURA data base development and plans to complete the design in FY 2005.

Moreover, EPA plans separate actions dealing with brominated flame retardants (BFRs) and perfluorooctanoic acid and its salts (PFOA), respectively. These chemicals are singled out for separate discussion below because they have recently been identified as requiring priority attention within the larger universe of existing chemicals.

**Brominated Flame Retardants (BFRs – PBDEs):** The potential risks to children associated with exposures to three brominated flame retardants -- penta-, octa-, and decabromodiphenylether (PBDEs) -- were assessed under the Voluntary Children's Chemical Evaluation Program (VCCEP). Recent studies have shown widespread presence of these chemicals, particularly lower brominated (tetra to hexa) congeners, in the environment and in

---

<sup>37</sup> U.S. EPA website, [www.epa.gov/opptintr/iur](http://www.epa.gov/opptintr/iur); Title 40 CFR Part 710, Subpart A

<sup>38</sup> U.S. EPA website, [www.epa.gov/opptintr/iur/amendment.htm](http://www.epa.gov/opptintr/iur/amendment.htm); Title 40 CFR Part 710, Subpart C

<sup>39</sup> U.S. EPA website, [www.epa.gov/opptintr/iur/amendment.htm](http://www.epa.gov/opptintr/iur/amendment.htm); Title 40 CFR Part 710, Subpart C

humans – including in human breast milk and serum.<sup>40</sup> Health concerns associated with human exposure to these chemicals include developmental neurotoxicity and thyroid effects. Biomonitoring data indicated that this chemical exists in food, drinking water and indoor air.<sup>41</sup> It is also widely distributed in aquatic and terrestrial fauna including species used by humans as food. PBDEs are typically used in such products as polyurethane foams, television and radio cabinets, printed circuit boards, and textiles including fabrics for upholstered furniture, automotive and airline seating, draperies, and carpets.

It is evident that there may be widespread exposure to PBDEs. What is not known are the potential risks of exposure to these chemicals. By 2005, the Agency will have a better understanding of the following:

- the chemicals' environmental properties, environmental fate, and exposure pathways,
- health and environmental effects, and
- potential substitutes.

EPA is working to determine whether the potential risks of PDBEs to children have been adequately characterized, and if not, to identify the data needs remaining. EPA is continuing to evaluate potentially safer substitutes for these chemicals in the TSCA New Chemicals Program. In addition, EPA continues to develop a significant new use rule (SNUR) which would require manufacturers and processors to notify the Agency before they produce certain chemicals as flame retardants for residential upholstered furniture. EPA will work with the Consumer Product Safety Commission (CPSC), which is in the process of developing a residential upholstered furniture flammability unit. Product stewardship and other voluntary efforts are other avenues to address this issue.

In 2005, EPA will continue its VCCEP efforts to assess and, if indicated, manage risks associated with brominated flame retardants. EPA will also continue its ongoing efforts to assess the potential risks of commercially developing BFR substitute chemicals in its New Chemicals program. EPA will track the adoption of State and Federal laws and regulations and consumer preferences that influence the use of brominated flame retardants in commercial and consumer products. EPA will monitor and encourage the adoption of chemical substitutes for brominated flame retardants in commercial and consumer products as appropriate.

PFOA (Perfluorooctanoic acid and its salts) and Fluorinated Telomers: In the late 1990's, EPA received information that PFOA and related chemicals were present in low amounts in the blood of the general population. Since then, EPA has examined this family of chemicals and worked with industry to collect more data under the Existing Chemicals program.

PFOA is a synthetic chemical used as an essential processing aid in the manufacture of fluoropolymers. Currently, fluoropolymers are employed in hundreds of industry segments, including aerospace, automotive, building/construction, and electrical. PFOA may also be produced by the degradation of other synthetic chemicals, called fluorinated telomers. Telomers are used as protective surface treatments on many industrial and consumer products, including

---

<sup>40</sup> "Environmental Health Perspectives," Volume 112(1), January 2004, "Brominated Flame Retardants: Cause for Concern?," review by Linda S. Birnbaum and Danielle S. Staskale; <http://ehpnet1.niehs.nih.gov/members/2003/6559/6559.html>

<sup>41</sup> Ibid.

carpet, paper, leather, and textiles, and as surfactants in cleaning products. Toxicity studies in laboratory animals reveal that PFOA causes developmental and systemic toxicity, immunotoxicity, and carcinogenicity.<sup>42</sup> PFOA is also persistent in the environment. Furthermore, EPA's preliminary assessment indicates potential exposure of the U.S. general population to PFOA at very low levels. However, we don't know the potential risks of PFOA at current levels or the sources of the chemical found in people and the environment.

In 2005, EPA will pursue PFOA risk management actions as indicated by the results of ongoing risk assessment and testing actions. EPA has developed a draft risk assessment for PFOA and plans to seek peer review of the assessment by EPA's Science Advisory Board in spring 2004. Manufacturers have voluntarily committed to developing hazard and exposure-related data that will be of assistance in the assessment of PFOA risks. Manufacturers, Federal and State agencies, and other interested parties are also participating in the development of enforceable consent agreements (ECAs) under Section 4 of TSCA that will direct the generation of additional information necessary to understand the sources of PFOA in the environment and the pathways leading to human and environmental exposures. EPA is also drafting a proposed rule that would amend the TSCA Polymer Exemption Rule<sup>43</sup> to exclude from eligibility certain perfluorinated polymers.

Acute Exposure Guideline Levels (AEGLs): Through the AEGL Program, EPA provides scientific and technical support in the development of emergency exposure limits and works with over nine Federal agencies, numerous State agencies, private industry, academia, emergency medical associations, unions, and other organizations in the private sector.<sup>44</sup> Recently, the program was extended to the international community, with the endorsement of the OECD and active participation by The Netherlands and Germany. In addition, the U.S. State Department is expected to provide a grant to Russia to support the AEGL Program. EPA has attended meetings in Russia to discuss that country's interaction with the AEGL program. The objective is to develop one standardized set of scientifically sound short-term exposure values that will be used worldwide for all chemical emergencies.

The AEGL program has been a key contributor to EPA's Homeland Security efforts for the nation. Acute inhalation values for chemicals of concern to homeland security have been developed with support from EPA's Office of Research and Development as well as direct support from Congress.

Through FY 2003, the AEGL Program has developed proposed values for 100 chemicals, of which 18 have been published as final by the National Academy of Science (NAS).<sup>45</sup> This includes 13 chemicals in FY 2003. The final AEGL values include nerve agents and mustard gas. These values are being used for emergency planning by the military and State agencies as the military begins to destroy stockpiled chemical warfare agents.

---

<sup>42</sup> U.S. EPA, "Revised Draft Hazard Assessment of Perfluorooctanoic Acid and its Salts," USEPA 11/4/2002, OPPT-2003-0012-0011

<sup>43</sup> 40 CFR Part 723.250

<sup>44</sup> National Research Council. 2001. Standing Operation Procedures for Developing Acute Exposure Guideline Levels for Hazardous Chemicals. Washington, DC: National Academy Press.

<sup>45</sup> National Research Council 2000. *Acute Exposure Guidelines Levels for Selected Airborne Chemicals, Volume 1.201pp, Volume 2.276pp, Volume 3.497pp*

In FY 2004, the President provided additional funding for AEGL development as a result of PART findings. In FY 2005, the President's Budget maintains this increase. EPA has initiated a broad based, collaborative effort to develop necessary AEGLs. To date, during the start-up phase, the program has developed approximately 1,500 AEGLs for approximately 100 chemicals with proposed, interim, or final status.

Toxic Substances: Chemical Risk Management: Most chemicals currently in commerce were introduced into the marketplace and the environment before their risks were known, and a number of these chemicals have turned out to be both prevalent and high-risk. EPA has established national programs which manage reductions in use, safe removal, disposal and containment of these chemicals, as appropriate. For example, significant risks are well established for polychlorinated biphenyls (PCBs), asbestos, mercury and dioxin. Reductions in uses and releases as well as dissemination of risk awareness and prevention information are important to reducing exposure of the general population and sensitive sub-populations to these chemicals. Many of these chemicals have impacts on all work that is ongoing in air, water, and waste, and the Agency coordinates approaches to maximize effectiveness, notably through the persistent bioaccumulative, and toxic (PBT) program.

Persistent, Bioaccumulative, Toxics (PBTs): EPA remains concerned about persistent bioaccumulative, and toxic (PBT) substances, a category of chemicals that includes mercury, dioxins/furans, and PCBs, because these pollutants persist in the environment and can build up to high concentrations in human and animal tissue.<sup>46</sup> Some PBTs can cause developmental and neurological defects in fetuses and young children and some are also suspected endocrine disruptors.

EPA is pursuing the development of National Action Plans for certain PBTs. Since FY 1999, the Agency has completed a National Action Plan for Alkyl-lead<sup>47</sup> and is tracking its implementation. The Agency has also fostered the development of effective cross-agency communication and collaboration through a cross-agency PBT Monitoring Strategy. Finally, EPA has focused on the development of National Action Plans for Mercury, Dioxins/Furans and PCBs.

New activities for FY 2004 and 2005 will include:

- Continuing efforts for dioxins and furans, Mercury and PCBs;
- Implementing a cross-agency routine PBT monitoring strategy;
- Seeking continued improvement in PBT risk communication through Agency- wide PBT-specific webpages (created in 2003) plus development of a cross-cutting PBT risk communication and outreach strategy; and
- Reviewing the results from major measurement, monitoring and data collection efforts.

Hospitals for a Healthy Environment: Though it renders uniquely valuable services, the healthcare sector uses a variety of toxic products and generates large volumes of waste. In an effort to expand voluntary pollution prevention strategies



<sup>46</sup> U.S. EPA website, [www.epa.gov/pbt](http://www.epa.gov/pbt)

<sup>47</sup> Federal Register, July 23, 2002, Vol. 67, Number 141, Page 48177-48178 - Final National Action Plan for Alkyl-lead; Notice of Availability. EPA web site: <http://www.epa.gov/pbt/alkyl1.htm>



to the healthcare sector, the Agency has collaborated with the American Hospital Association, Health Care Without Harm, and the American Nurses Association to create the voluntary program called Hospitals for a Healthy Environment (H2E) (discussed in greater detail under PBT section above). H2E works with hospitals and health care facilities to eliminate non-essential mercury use, reduce hospital wastes, and identify and eliminate the use of non-essential persistent, bio-accumulative, and toxic chemicals (PBTs).

As H2E participants, hospitals and health care facilities pledge to eliminate mercury by 2005 and reduce overall hospital waste by 50 percent by 2010. EPA is maintaining its support for the Hospitals for a Healthy Environment program, which continues to recruit new partners and make progress towards its mercury and waste reduction goals. For mercury use reduction, EPA plans to create additional partnerships with industry to reduce existing mercury uses. To improve the quality of data used for assessing trends, the Agency will develop a database on national industry use of mercury.

The H2E program continues to actively recruit hospital and health care facilities. Currently, over 2,100 facilities are participating in the program and it is expected that as many as one-third of the nation's 6,000 hospitals will pledge to the program.<sup>48</sup> Recently, the Veterans Health Administration, Kaiser Permanente, and Catholic Health Association all pledged commitment to the program.

Currently, the United States is experiencing a significant demographic transformation, with the number of persons of age 65 and older expected to double by the year 2030.<sup>49</sup> As a result, EPA has announced a comprehensive and coordinated new aging initiative to address the environmental health needs of older populations. As part of the new Aging Initiative, H2E has signed on 84 nursing homes as H2E partners<sup>50</sup> and will continue to bring more nursing homes into the program and extend its outreach to assisted living and long-term healthcare facilities.

FY 2005 Activities will include the following:

- Developing a "green chemical inventory" program to help facilities identify and eliminate use of harmful chemicals on-site;
- Promoting the use of greener cleaning chemicals;
- Training in integrated pest management and safer pesticide use;
- Providing building specifications for green construction of assisted living and long-term care facilities;
- Providing purchasing specifications for environmentally preferable products; and
- Providing older persons and their caregivers with a "Guide to Choosing an Environmentally Friendly Care Facility"

Polychlorinated Biphenyls (PCBs): Polychlorinated biphenyls (PCBs) have been shown to cause a wide variety of health effects, often at very low levels. The average American carries enough PCB in his or her body to meet or exceed the minimum threshold for beginning health problems due to PCBs. Because of their insulating and nonflammable properties, PCBs had been

---

<sup>48</sup> www.h2e-online.org

<sup>49</sup> U.S. Census Bureau, "The 65 Years and Over Population: 2000," October 2001

<sup>50</sup> www.h2e-online.org

widely used as coolants and lubricants in transformers, capacitors, and other electrical equipment before manufacture was stopped in 1977.<sup>51</sup> This equipment is now reaching the end of its useful life. Reducing exposure through safely disposing of existing equipment or materials containing PCBs is the main focus of EPA's program. PCBs are an issue with implications for domestic industry, international commerce and defense.

In FY 2005, EPA will continue to encourage the voluntary phase-out of PCB Large Capacitors and PCB Transformers. Activities to facilitate this voluntary phase-out include discussions with major Federal and private owners and operators of electrical equipment; identification of opportunities for replacement of older, less efficient equipment with new more efficient equipment; and the accelerated phase-out of PCB containing electrical equipment as supplemental environmental projects. These activities are reflected in our annual performance goals, which measure the number of PCB Large Capacitors and PCB Transformers disposed of since 1991 as reported by the disposal facilities. In addition, assuming ratification of the Stockholm Agreement (POPs), EPA will be actively involved in implementing the Agreement including the development of a PCB implementation plan and strategy.

EPA will continue to work toward achieving the U.S. commitments to the North American Regional Action Plan (NARAP) for PCBs. The U.S. obligation in the NARAP for PCBs establishes a goal for the virtual elimination of PCBs in items such as PCB Large Capacitors and PCB Transformers by 2008. In the most recent data, between 1999 and 2001, PCB waste management companies reported the disposal of 36,258 PCB Large Capacitors and 24,792 PCB Transformers.<sup>52</sup>

EPA will continue to work with the Maritime Administration (MARAD) in order to dispose of its fleet of obsolete ships which contain equipment using PCBs, in FY 2005. MARAD has a fleet of approximately 130 obsolete ships that are ready for disposal. Proposed methods of disposal include domestic and foreign scrapping. Pursuant to legislation enacted in FY 2003<sup>53</sup>, EPA and MARAD were directed to implement one or more pilot programs for foreign scrapping by September 30, 2003; each pilot is limited to no more than four ships. EPA granted MARAD enforcement discretion to export 13 ships for scrapping to the United Kingdom (UK). MARAD has exported four ships. MARAD and EPA are considering rulemaking to allow the export of the remainder of the ships. MARAD is also considering scrapping proposals from shipyards in China and the Northern Marianas. The deadline for disposing of the remaining ships is 2006.

Two Department of Defense incinerators have begun trial burns of PCB-containing nerve agent rockets in FY 2004, which are expected to lead to final disposal approvals. Two existing DoD incinerators will continue PCB disposal activities and their PCB disposal approvals will be modified as needed. By 2005, EPA expects to issue final approvals needed to ensure environmentally safe disposal of nerve agent rockets with PCB contamination.

Dioxin: "Dioxins" refers to a group of chemical compounds that share certain chemical structures and biological characteristics. Studies have shown that exposure to dioxins at high

---

<sup>51</sup> National Safety Council webpage; Polychlorinated Biphenyls (PCB) Chemical Backgrounder at [www.nsc.org/library/chemcial/polychlo](http://www.nsc.org/library/chemcial/polychlo)

<sup>52</sup> 40 CFR 761.180(b)

<sup>53</sup> Title XXXV, Maritime Administration Sec. 3504 (Bob Stump National Defense Authorization Act for Fiscal Year 2003)

enough doses may cause a number of adverse health effects.<sup>54</sup> Federal, State and private sector efforts to reduce releases of dioxins and dioxin-like compounds have had significant results. As the regulations now in place are fully implemented over the next few years, dioxin emissions from well characterized sources will be reduced by more than 90 percent, using 1987 as a baseline. Human exposure to dioxin-like compounds has also declined. Current tissue levels in humans are about half of those estimated for the early 1980s. Further reductions in exposure become increasingly difficult because of dioxin's environmental persistence.

EPA will continue to be part of an interagency effort to assess potential dioxin risks to the public, focusing on identifying and better quantifying the link between sources of dioxin-like compounds and potential human exposures. Results from the Agency's Dioxin Exposure Initiative (DEI) have already resulted in the identification of additional sources, and the establishment of baseline measurements of dioxins in food and air.

Studies on dioxin sources included testing of certain coal-fired utilities, uncontrolled combustion of household waste, and releases from utility poles treated with pentachlorophenol. EPA also conducted sediment analysis of selected lakes across the U.S. to establish long-term historic trends in dioxin environmental levels. EPA helped organize and has actively participated in the Interagency Dioxin Research Coordination workgroup with FDA, CDC, USDA, and others.

In addition, the Agency designed and deployed the National Dioxin Air Monitoring Network (NDAMN) and modified EPA's air transport model<sup>55</sup> so that it could predict long-range transport of dioxin. NDAMN data will help the Agency track the effectiveness of EPA's recent combustion regulations in achieving the anticipated reductions in dioxin levels in ambient air.

On the international level, EPA has provided the lead for U.S. participation and development of a draft Phase I North American Regional Action Plan for Dioxins and Furans, and Hexachlorobenzene<sup>56</sup>. After this draft Action Plan undergoes public review, it will be finalized and submitted for approval to the environmental ministers of the U.S., Canada and Mexico. In addition, assuming ratification of the Stockholm Agreement (POP's), EPA will be actively involved in implementing the Agreement including the development of a Dioxin implementation plan and strategy that reaches beyond North America.

Mercury: Mercury can be a potent neurotoxin and is known to bioaccumulate, notably in fish. Approximately 8 percent of women of childbearing age, representative of the United States population, had blood mercury concentrations higher than the U.S. Environmental Protection Agency's recommended reference dose, according to 1999/2000 data from the National Health and Nutrition Examination Survey published in April 2003 in the Journal of the American Medical Association<sup>57</sup>. EPA has taken numerous actions to reduce sources of mercury pollution to air, water and waste through regulatory and permit programs. EPA is developing a new draft

---

<sup>54</sup> Dioxin Qs & As, [www.epa.gov/ncea/dioxinqa](http://www.epa.gov/ncea/dioxinqa)

<sup>55</sup> Regional Lagrangian Model of Air Pollution (RELMAP).

<sup>56</sup> [www.ceo.org/pubs\\_docs/documents/index.cfm?varlan=english&ID=1220](http://www.ceo.org/pubs_docs/documents/index.cfm?varlan=english&ID=1220)

<sup>57</sup> Schober SE, Sinks TH, Jones RL, Bolger PM, McDowell M, Osterloh J, Garrett ES, Canady RA, Dillon CF, Sun Y, Joseph CB, and Mahaffey KR. Blood mercury levels in US children and women of childbearing age, 1999-2000. *JAMA* 289:1667-1674, 2003

of the Agency's Mercury Action Plan (MAP), which will outline EPA's multimedia, multi-office goals and priority actions for addressing mercury pollution and exposure over the coming years.

To meet the Agency's objectives of reducing chemical risks to humans, communities, and ecosystems, EPA has provided support to a number of regional and State programs designed to reduce mercury use and releases, and is working with our Federal and international partners on relevant aspects of the issue.

The Agency has also worked with the Quicksilver Caucus, a coalition of State government organizations formed to highlight their concerns about mercury pollution. The Quicksilver Caucus issued draft reports in 2003 regarding how to meet mercury reduction goals for specific water bodies where mercury pollution is caused primarily by air deposition, and safe stewardship of mercury stocks and mercury-containing wastes<sup>58</sup>.

EPA and DOE collaborated on research on mercury treatment and alternatives for managing mercury wastes and bulk elemental mercury. A report summarizing the work was published in January 2003<sup>59</sup>. To support policy decisions on long-term disposition of mercury supplies that may no longer be needed or in demand, EPA will examine numerical data on secondary-market recycling (retorting) and disposal, and renew research efforts to develop and demonstrate a viable stabilization technology for mercury.

EPA has worked with schools as well, to communicate to teachers, school administrators, students, and parents the importance of reducing mercury in schools and the community. Regional workshops and on-line training courses for teachers, as well as an expanded curriculum package and a web site help to address health issues, cultural uses, mercury in schools, mercury in the community, environmental effects, and history of mercury use. In FY 2004 and 2005, EPA will continue looking at new ways to promote additional reductions in mercury use, such as through the voluntary Green Suppliers Network, and through continued support for regional and State programs and partnerships.

For enhancing mercury risk communication, the Agency will develop tools for educating different audiences, including the general population, cultural fish eaters, and Tribes in the lower 48 States about the risks of eating mercury-contaminated fish and bioaccumulation in various organs in fish-eating wildlife species. We will measure the effectiveness of these risk communication efforts by moving beyond anecdotal feedback to survey-based feedback.

Asbestos/Fibers: Asbestos is not a PBT, but use and management of asbestos and asbestos-containing products remains a matter of concern for EPA and other Federal agencies. Asbestos is known to cause a variety of health problems when inhaled into the lungs.

In 2002, EPA commissioned an Asbestos Strategies project to take stock of the recent experience and potential solutions and options regarding the use and management of asbestos. In consideration of the recommendations of this document and the recent experience and public concerns over mining and processing of vermiculite containing asbestos, EPA is in the process of developing an Asbestos Action Plan. This new EPA Asbestos Action Plan, including a Research

---

<sup>58</sup> [www.sso.org/ecos](http://www.sso.org/ecos)

<sup>59</sup> 68 FR 4481, January 29, 2003

Agenda, will guide the future direction of its asbestos program. EPA will focus its efforts to reduce exposure to this fiber, which is known to cause various forms of cancer as well as certain other diseases in humans. In 2005, the Agency will also address the development of fiber science and fiber toxicity issues, and address the need to develop a definitive and accurate bulk testing method for asbestos contamination in vermiculite attic insulation and other potentially contaminated materials.

In 2003, the Agency launched a public awareness campaign aimed at asbestos-contaminated vermiculite attic insulation. In FY 2004 and 2005, outreach and technical assistance will be expanded for the asbestos program for schools, in coordination with the Occupational Safety and Health Administration (OSHA), the Department of Education, the States, the National Parent-Teachers Association, and the National Education Association. A new project to determine and ultimately convey the risks to homeowners and remodelers from asbestos-contaminated vermiculite home insulation is underway. EPA also plans to conduct a market analysis of the asbestos products and asbestos contaminated products currently in commerce. To inform the public of the potential risks and sources of asbestos exposure, the Agency will also continue developing outreach materials such as the recently completed *Vermiculite Attic Insulation: Current Best Practices* consumer guidance brochure.<sup>60</sup>

EPA will also continue to coordinate with other Federal agencies -- including OSHA, MSHA, NIOSH, CPSC, ATSDR, and USGS – on asbestos issues. In FY 2005, EPA will continue to examine results from its studies into the potential for exposure to asbestos fibers from vermiculite in building insulation materials.

### ***Toxic Substances: Lead Risk Reduction Program***

#### ***Categorical Grant: Lead***

Exposure to lead from deteriorated lead-based paint and other sources is the primary cause of lead poisoning in children in the U.S. today. Children may ingest lead-based paint dust or chips from flaking walls, windows and doors or when lead-based paint is disturbed in the course of renovation, repair or abatement activity. EPA has been implementing a program to establish a national infrastructure of trained and certified lead remediation professionals; establish hazard control methods and standards to ensure that homeowners and others have access to safe, reliable and effective methods to reduce children's exposure to lead-based paint; and provide information to homeowners and occupants so that they can make informed decisions regarding lead-based paint hazards in their homes. This activity area also includes EPA's work on addressing sources of lead exposure other than from lead-based paint.

The lead categorical grant program provides assistance to States, territories, the District of Columbia and Indian Tribes to develop and carry out authorized programs for the training of individuals engaged in lead-based paint activities, the accreditation of training programs for those individuals, and the certification of contractors engaged in lead-based paint activities. Similar activities are implemented directly by EPA in States that have not been granted authorization for these functions.

---

<sup>60</sup> U.S. EPA, Office of Pollution Prevention and Toxics and U.S. Health and Human Services Agency for Toxic Substances and Disease Registry. *Current Best Practice for Vermiculite Attic Insulation*. EPA 747-F-03-001. May 2003. Washington D.C.

In recent years, EPA has focused on reducing children's exposure to lead in paint and dust by crafting a regulatory framework to improve work practices associated with lead-based paint and by educating parents and the medical community about the effects of lead poisoning and steps that can be taken to prevent it. For example, EPA has promulgated rules to establish training and certification programs for lead professionals, and to establish right-to-know programs mandating disclosure of specific lead issues prior to real estate transactions and renovations. EPA has also managed the National Lead Information Clearinghouse and has produced many brochures and educational programs.

The Agency has made great strides in reducing the incidence of childhood lead poisoning through this combination of rulemaking and education, coupled with research and partnerships mainly with the Department of Housing and Urban Development (e.g., with States). According to data from the National Health and Nutrition Examination Survey, for children one to five years of age, the incidence of children with elevated blood lead levels dropped from about 900,000 cases in the early 1990s to approximately 434,000 cases in 2000-2001. In addition, the geometric mean blood level for children ages one to five years decreased from 15 micrograms per deciliter to two micrograms per deciliter from 1980 to 1999.<sup>61</sup>

States contributed significantly to achieving EPA's goal of lowering children's blood lead levels and reducing childhood lead poisoning. Partnering with 37 authorized States, three Tribes, and two territories, EPA has made substantial progress toward its goal of establishing a national cadre of trained and certified lead-based paint abatement professionals. By the end of FY 2002, more than 4,000 workers were certified to employ EPA-required and recommended work practices to reduce the primary remaining source of children's exposure to lead<sup>62</sup>.

EPA is working with other Federal agencies, mainly HUD, HHS, and DOJ through the President's Task Force on Environmental Health Risks and Safety Risks to Children on implementing a Federal strategy to virtually eliminate lead poisoning. In 2005, EPA will continue the lead-based paint training and certification program through EPA-authorized State, territorial and Tribal programs and, in States and territories without EPA authorization, through direct implementation by the Agency. EPA is also continuing to work on the lead regulatory framework. In FY 2004, EPA plans to work on rules covering management of lead-contaminated debris and notification prior to abatement work. EPA is continuing to implement the lead hazard standards rule, the lead renovation information rule and the real estate notification and disclosure rule<sup>63</sup>.

In FY 2005, EPA plans to proceed with a proposed rule on the de-leading of bridges and structures. EPA will devote resources to this rule and other regulatory reviews to ensure that the Agency has a seamless and synchronized program with a high likelihood of being effective in the highest risk areas. Because much of the remaining incidence of lead poisoning occurs in low-income, urban areas, new "Hotspots" initiatives that consider multiple sources of lead exposure will focus on these populations. EPA will initiate a voluntary program for remodelers and renovators in order to increase the use of lead safe work practices by this large industry. In partnership with other Federal agencies and State and local governments, we anticipate that these

---

<sup>61</sup> Centers for Disease Control, National Center for Health Statistics. *National Health and Nutrition Examination Survey: 1999-2002*. Available online at <http://www.cdc.gov/nchs/nhanes.htm>.

<sup>62</sup> Certification status tracked via FLPP (Federal Lead-based Paint Program), an EPA automated system

<sup>63</sup> 40 CFR Part 745

targeted measures will allow us to achieve our 2008 goal for reducing lead poisoning to 90,000 children with elevated blood lead levels, consistent with the Federal government's goal of virtually eliminating childhood lead poisoning by 2010.

### ***Toxics Release Inventory/Right to Know***

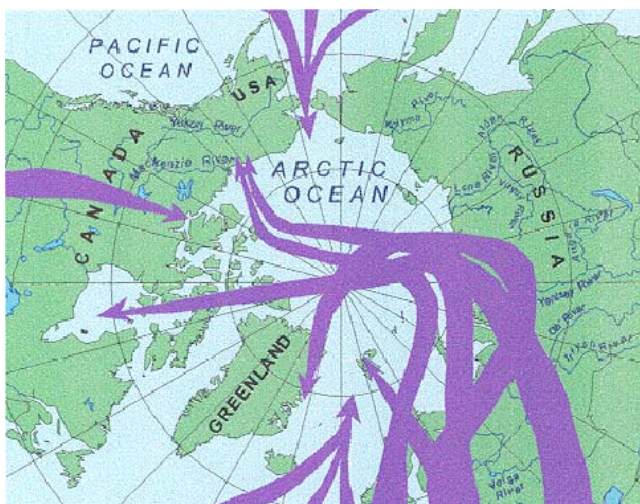
By using TRI information, citizens, businesses, community groups, researchers, and governments can work together to make informed decisions that will better protect human health and the environment, in real-time and for the long term. TRI provides the public with information on releases and other waste management activities of toxic chemicals. Two laws, Section 313 of the Emergency Planning and Community Right-To-Know Act and Section 6607 of the Pollution Prevention Act, mandate that EPA annually collect information on listed toxic chemicals from certain industries and make the information available to the public through various means, including a publicly accessible national database.

The annual use of TRI-ME reporting software will continue to reduce the reporting burden on the regulated community, increase data quality, and allow EPA to make important facility information available in a timely and effective way.

### ***POPs Implementation***

EPA is developing an international POPs Implementation Plan focusing on the priority pollutants under the Stockholm Convention. Goals of this plan include: 1) reduction in the releases of POPs reaching the U.S. by long range transport; 2) reduction of sources of POPs in countries of origin, focusing on PCB-containing equipment, obsolete pesticides stockpiles, and dioxins and furans emissions from combustion sources; and 3) better inter- and intra-country coordination on POPs implementation activities by improving access to POPs technical, regulatory and program information on the Internet. In FY 2005, efforts to reduce releases and transboundary transport of PBTs, initiated in FY 2004, will continue.

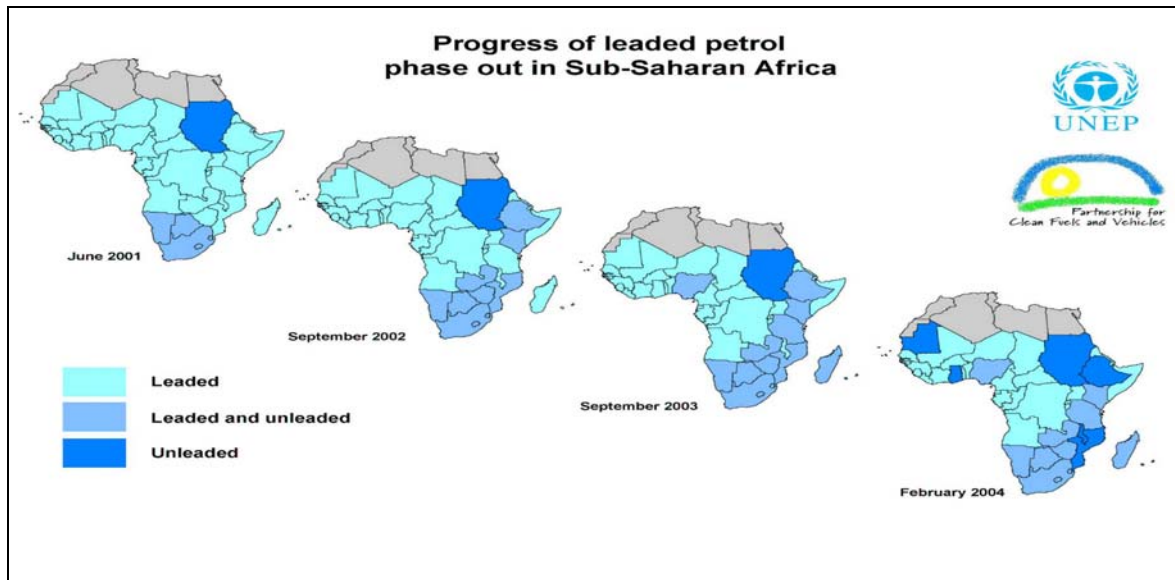
In FY 2005, EPA will continue to monitor and develop strategies to address atmospheric and other long-range transport of contaminants. For example, current levels of contaminants transported to and deposited in the Arctic region are a concern. Unless preventative measures are taken, levels will increase due to continued economic growth and transboundary transport from the surrounding regions. Long-range transport of contaminants to and from the U.S. is one of many concerns within a larger context of global atmospheric exchange of contaminants in which all countries participate as both sources and receptors.



Mercury, POPs, and other pollutants are carried into the Arctic, and trapped by circulation patterns Crane K., Galasso JL., 1999. Arctic Environmental Atlas. Washington, DC. Office of Naval Research, Naval Research Laboratory

The Agency is increasingly concerned that progress made domestically to reduce our mercury emissions will be overwhelmed by atmospheric transport of mercury from abroad. International uses and emissions of mercury contribute an estimated 40 percent of U.S. atmospheric mercury deposition, with an estimated one-third of all releases coming from fossil-fuel burning in Asia.<sup>64</sup> Once deposited in U.S. Territories, mercury quickly enters the food chain with consequent risks to human health. In FY 2005, EPA will continue to expand the geographic reach of its mercury monitoring, modeling and pollution prevention efforts. Mercury is one of the three pollutants to be addressed by the Clear Skies Initiative.

Since 1993, EPA has been actively promoting the phase-out of lead additives in gasoline on the international level. EPA is a founding partner in the Partnership for Clean Fuels and Vehicles. Through the Partnership, the Agency works with international organizations, the private sector, and donor countries to encourage the phase out of lead in gasoline, the reduction of sulfur levels in fuels, and the use of vehicle technologies to improve air quality. In FY 2005, EPA will focus its efforts on Sub-Saharan Africa, as it is more severely affected by lead poisoning and pollution than any other region of the world. The vast majority of countries on the African continent still use leaded gasoline, and the lead content of that gasoline is the highest in the world. EPA will also implement Partnership activities in other regions of the world, including the U.S.-Mexico Border region and China.



United Nations Environmental Programme (UNEP), Partnership for Clean Fuels and Vehicles, UNEP. Accessible only through the Internet <http://www.unep.org/pcfV/Documents/MapProgressSSA4-sm.JPG>

In this increasingly global economy, chemical risk identification and risk management is a responsibility of all. EPA has been deeply involved in international efforts to manage POPs and select heavy metals (e.g., mercury), including in the negotiation to establish the Stockholm Convention on Persistent Organic Pollutants, a legally binding global convention on POPs.

<sup>64</sup> U.S. Environmental Protection Agency. Office of Air Quality Planning and Standards and Office of Research and Development. Mercury Study Report to Congress (Volumes I- VIII). EPA-452/R-97-003 through EPA-452/R-97-010. December 1997.



Another important international agreement, the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade was signed in 1998, and will come into force once 50 countries have ratified it.

State and Local Prevention and Preparedness: The Agency's chemical emergency preparedness and prevention program seeks to decrease the risks associated with the manufacture, transportation, storage and use of hazardous chemicals. The program is primarily responsible for implementing the accidental release prevention provisions of the Clean Air Act, and the emergency preparedness authorities of the Emergency Planning and Community Right-to-Know Act (EPCRA). The program also implements right-to-know initiatives stemming from EPCRA, to inform the public about chemical hazards and supports actions at the local level to reduce risk. The cornerstone of the program is a belief that the operators of facilities who have hazardous chemicals are primarily responsible for the safe handling of those chemicals. In addition, since the risks posed by these facilities are local issues, state and local governments (as well as the community) play a critical role in risk reduction. EPA estimates that nationwide over 500,000 facilities have significant quantities of hazardous chemicals that are subject to EPCRA requirements.

All Americans benefit from an effective chemical safety program because hazardous chemical substances are virtually everywhere and chemical accidents are an ever-present danger. The facilities required to develop comprehensive Risk Management Plans (RMPs) reported over 1,900 accidents over the past five-year period involving deaths, injuries, significant property/environmental damage and/or evacuations/shelter-in-place.

Section 112(r) of the Clean Air Act requires facilities that handle quantities of regulated substances to develop RMPs and submit them to EPA, state agencies, and local emergency planning committees (LEPCs). Approximately 15,000 facilities have reported under the RMP requirement to date. Through this program, Federal, state, and local agencies and the general public have access to large amounts of information on the presence of chemicals in every community and the potential hazards those chemicals present.

The Risk Management Program regulations were built on practices currently used in many industries for process safety management. Each RMP describes the process safety management systems used by a facility for preventing accidents and documents the facilities' compliance with the regulation.

Each RMP identifies and assesses the hazards posed by on-site chemicals. It also provides a five-year facility accident history and outlines an accident prevention program and an emergency response plan. The statutory deadline for filing RMPs was June 1999. While the numbers are still being tallied, EPA estimates that it will reach its goal of 90 percent compliance by the end of 2003. Since the statute requires RMPs to be updated every five years, facilities will submit the next round of RMPs by June 21, 2004. EPA will need to manage and screen the reports in a volume similar to the initial reports submitted in calendar year 1999. Consistent with its renewed focus on finding ways to improve facility safety, EPA will begin to analyze the data from this second generation of RMPs, looking for accident trends and patterns in areas such as industry sector, facility size, geographic region and chemicals.

The Clean Air Act requires EPA to establish a system to audit RMPs. The audit system is used to continuously improve the quality of risk management programs as well as check compliance with the requirements. In FY 2005, the EPA and other implementing agencies will perform their audit obligations through a combination of desk audits of RMP plans and on-site facility inspections. A total of 400 audits will be conducted during this period. Audit selection will be based upon several criteria, including accident history, patterns of noncompliance, types and quantities of chemicals, and geographic location. In an effort to help implementing agencies, states, and prospective third party auditors acquire or improve skills required to conduct audits, EPA has identified an RMP audit curriculum. The training will be offered extensively throughout the country in FY 2005. In addition to auditing the quality of the RMPs submitted, EPA will continue to look for facilities that have not yet submitted their RMPs as required.

In FY 2005, in the regulatory area, the program will complete Regulatory Actions on changes to RMP submission and reporting requirements, as well as program adjustments to RMP Info/Submit to accommodate regulatory changes.

One of EPA's vital roles is to help communities implement accident prevention and emergency preparedness programs. LEPCs (3,400 established under EPCRA) serve as the focal point for discussions on reducing chemical risks at the local level. Under the EPCRA and RMP programs, LEPCs take chemical inventory information and information on how facilities are reducing the risk of accidents, and integrate it into their emergency plans and community right-to-know programs and community-wide accident prevention programs. In FY 2005, EPA will support LEPC efforts by providing tools, technical assistance and guidance to better enable them to use the information to reduce risks.

EPA, in partnership with states, will continue the implementation of the RMP program during FY 2005. Since nearly all facilities will be submitting updated RMPs in May 2004, EPA will publicize the RMP program and undertake renewed efforts to promote state implementation. The Agency believes individual states are best suited to implement the program because they benefit directly from its success and have established relationships with the communities that may be at risk. EPA also believes that as state officials see their facilities achieve compliance, they will become motivated to seek delegation. The Agency will continue to emphasize flexibility in how states will be authorized to receive delegation and eventually implement the RMP program themselves. EPA will host an RMP implementing agency conference and will work with states to secure agreements to partially implement the RMP program and help them to develop and manage individual program components. In addition to this effort, EPA will provide states a combination of grant assistance, technical support, training, and other outreach services to help them fully develop and receive delegation of the program. EPA Regional offices will continue to manage RMP programs in those states that have not accepted delegation.

#### **FY 2005 CHANGE FROM FY 2004**

##### **EPM**

- (+\$4,400,000): This increase is requested in the base Reregistration program to complete food use Registration Eligibility Decisions (REDs). Reregistration of food use inert

ingredients and certain anti-microbials must be started in FY 2005 if the Agency is to meet our final statutory deadlines for tolerance reassessment in 2006.

- (+\$1,000,000): This increase for the Endangered Species Program will fund activities to implement enhanced reviews developed in consultation with the Fish and Wildlife Service and the National Marine Fisheries Service. This will ensure that the licensed use of pesticides is not the cause of any species decline or extinction.
- (-\$4,000,000): This decrease to EPA's lead program reflects the successful reduction in the number of children with elevated blood levels, which has halved to approximately 400,000 since the early 1990's and the decrease in geometric mean blood lead levels for children age one to five to two µg/dl. EPA will continue to develop the lead-based paint regulatory infrastructure mandated by Title X. In addition, EPA will continue to work as an active member of the President's Task Force on Environmental Health Risks and Safety Risks to Children to virtually eliminate lead poisoning in children by 2010.
- (+\$1,331,700, +3.5 FTE): This increase allows the TRI data flows to move through the Enterprise Portal.
- There are additional increases for payroll, cost of living, and enrichment for new and existing FTE.

**ANNUAL PERFORMANCE GOALS AND MEASURES**

**GOAL: HEALTHY COMMUNITIES AND ECOSYSTEMS**

**OBJECTIVE: CHEMICAL, ORGANISM, AND PESTICIDE RISKS**

**Annual Performance Goals and Measures**

**Decrease Risk from Agricultural Pesticides**

- In 2005 Ensure new pesticide registration actions (including new active ingredients, new uses) meet new health standards and are environmentally safe.
- In 2005 Percentage of acre treatments that will use applications of reduced-risk pesticides
- In 2004 Decrease adverse risk from agricultural uses from 1995 levels.
- In 2003 124 safer chemicals and biopesticides were registered, 72 new chemicals were registered, and 425 new uses were registered. Date for acre-treatments is expected in 2004.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Register safer chemicals and biopesticides	124	131	135	Regist. (Cum)
New Chemicals (Active Ingredients)	72	74	84	Regist. (Cum)
New Uses	425	3,079	3,479	Actions (Cum)
Percentage of acre-treatments with reduced risk	Data lag	8.5%	8.7%	Acre- Treatments

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.
pesticides			
Maintain timeliness of S18 decisions			45      Days
Reduce registration decision times for new conventional chemicals			7%      Reduction
Reduce registration decision times for reduced risk chemicals			3%      Reduction

**Baseline:** The baseline for registration of reduced risk pesticides, new chemicals, and new uses, is zero in the year 1996 (the year FQPA was enacted). Progress is measured cumulatively since 1996. The baseline for acres-treated is 3.6% of total acreage in 1998, when the reduced-risk pesticide acres-treatments was 30,332,499 and total (all pesticides) was 843,063,644 acre-treatments. Each year's total acre-treatments, as reported by Doane Marketing Research, Inc. serves as the basis for computing the percentage of acre-treatments using reduced risk pesticides. Acre-treatments count the total number of pesticide treatments each acre receives each year. As of 2003, there are no products registered for use against other potential bio-agents (non-anthrax). Conventional pesticides FY 2002 baseline for reducing decision time is 44 months; reduced risk pesticides FY 2002 baseline for reducing time is 32.5 months. The 2005 baseline for expedited new active ingredient pesticides is 4. The S18 2005 baseline is 45 days.

**Reduce use of highly toxic pesticides**

- In 2005      Decrease occurrence of residues of carcinogenic and cholinesterase-inhibiting neurotic pesticides on foods eaten by children from their average 1994-1996 levels
- In 2004      Decrease occurrence of residues of carcinogenic and cholinesterase-inhibiting pesticides on foods eaten by children from their average 1994-1996 levels.
- In 2003      Data available in 2004.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.
Reduction of detections on a core set of 19 foods eaten by children relative to detection levels for those foods reported in 1994-1996.	Data lag	25%	27%      Reduced Detections

**Baseline:** Percent occurrence of residues of FQPA priority pesticides (organophosphates and carbamates) on samples of children's foods in baseline years 94-96. Baseline percent is 33.5% of composite sample of children's foods: apples, apple juice, bananas, broccoli, carrots, celery, grapes, green beans (fresh, canned, frozen), lettuce, milk, oranges, peaches, potatoes, spinach, sweet corn (canned and frozen), sweet peas (canned and frozen), sweet potatoes, tomatoes, and wheat.

**Reassess Pesticide Tolerances**

- In 2005      Ensure that through ongoing data reviews, pesticide active ingredients, and products that contain them are reviewed to assure adequate protection for human health and the environment, taking into consideration exposure scenarios such as subsistence lifestyles of the Native Americans
- In 2004      Ensure that through on-going data reviews, pesticide active ingredients and the products that contain them are reviewed to assure adequate protection for human health and the environment, taking into consideration exposure scenarios such as subsistence lifestyles of Native Americans.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Tolerance Reassessment	68%	78%	87.7%	Tolerances (Cum)
Reregistration Eligibility Decisions (REDs)	75%	81.7%	88.2%	Decisions (Cum)
Product Reregistration	306	750	400	Actions
Tolerance reassessments for top 20 foods eaten by children	65.6%	83%	93%	Tolerances (Cum)
Number of inert ingredients tolerances reassessed		100	100	tolerances
Reduce decision time for REDs			7%	Reduction

Baseline: The baseline value for tolerance reassessments is the 9,721 tolerances that must be reassessed by 2006 using FQPA health and safety standards. The baseline for REDS is the 612 REDs that must be completed by 2008. The baseline for inerts tolerances is 870 that must be reassessed by 2006. The baseline for the top 20 foods eaten by children is 893 tolerances that must be reassessed by 2006. Tribal Pilot of 2 models in FY 2003; total number of models to be determined (current estimate is 16-18). Reregistration decision time baseline 38-40 months.

#### Testing of Chemicals in Commerce for Endocrine Disruption

In 2005 Standardization and validation of screening assays

In 2004 Standardization and validation of screening assays

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Screening Assays Completed		11	11	Screening assay

Baseline: The non-prioritized universe of chemicals that needs to be considered for prioritization includes: pesticide active ingredients, pesticide inert ingredients, chemicals on the TSCA Inventory, environmental contaminants, food additives, pharmaceuticals, cosmetics, nutritional supplements, and representative mixtures. "Priority-setting" refers to the determination of priorities for entry into Tier 1 Screening. The baseline for the Tier 1 screening measure is zero in 1996 - no valid methods for endocrine disruptor screening and testing existed when FQPA was enacted in FY1996.

#### Process and Disseminate TRI Information - OEI

In 2005 The increased use of the Toxic Release Inventory Made Easy (TRI-ME) will result in a total burden reduction of 5% for Reporting Year 2004 from Reporting Year 2003 levels.

In 2004 The increased use of the Toxic Release Inventory Made Easy (TRI-ME) will result in a total burden reduction of 5% for Reporting Year 2003 from Reporting Year 2002 levels.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Percentage of TRI chemical forms submitted over the Internet using TRI-ME and the Central Data Exchange.	25	50	55	Percent

Baseline: 4.2 million hours for FY 2002.

**Reduce Wildlife Incidents and Mortalities**

In 2005 Reduce from 1995 levels the number of incidents involving mortalities to nontargeted terrestrial and aquatic wildlife caused by pesticides

In 2004 Reduce Wildlife Incidents and Mortalities

Performance Measures:	FY 2003	FY 2004	FY 2005	
	Actuals	Pres. Bud.	Pres. Bud.	
Number of incidents and mortalities to terrestrial and aquatic wildlife caused by the 15 pesticides responsible for the greatest mortality to such wildlife		5	11	reduction

Baseline: 80 reported bird incidents (involving 1150 estimated bird casualties); 65 reported fish incidents (involving 632,000 estimated fish casualties) as reported in 1995.

**Exposure to Industrial / Commercial Chemicals**

In 2005 Reduce exposure to and health effects from priority industrial / commercial chemicals

In 2004 Reduce exposure to and health effects from priority industrial / commercial chemicals

Performance Measures:	FY 2003	FY 2004	FY 2005	
	Actuals	Pres. Bud.	Pres. Bud.	
Safe Disposal of Transformers		5,000	5,000	Transformers
Safe Disposal of Capacitors		9,000	9,000	Capacitors
number of children aged 1-5 years with elevated blood lead levels (>10 ug / dl)		270,000	225,000	children

Baseline: 1999/2000 baseline released in January 2003: Approximately 400,000 cases of childhood lead poisoning cases according to NHANES data. In 2004 a larger data set will be included as we will be expanding to include more EPA Regional efforts that will include all federally administered and State administered programs. Introduced the "number of children aged 1-5 years" measure in FY2004. Since the baseline is 1999/2000 data we are unable to project targets for 2004 and 2005 due to the data-lag. The FY2003 data for a new baseline may not be available until 2005. The baseline for PCB transformers is estimated at 2.2 million units and for capacitors is estimated at 1.85 million units as of 1988 as noted in the 1989 PCB Notification and Manifesting Rule. From 1991-2001 there was a declining trend in PCB disposal due to failing equipment and environmental liability: the total number of PCB large capacitors safely disposed of 436,485 and the total number of PCB transformers safely disposed of 172,672 as of 2002.

**Risks from Industrial / Commercial Chemicals**

In 2005 Identify, restrict, and reduce risks associated with industrial/commercial chemicals.

In 2004 Identify and reduce risks associated with international industrial/commercial chemicals.

In 2004 Identify, restrict, and reduce risks associated with industrial/commercial chemicals.

In 2003 Of the approximately 1,633 applications for new chemicals and microorganisms submitted by industry, ensure those marketed are safe for humans and the environment. Increased proportion of commercial chemicals that have undergone PMN review to signify they are properly managed and may be potential "green" alternatives to existing chemicals in commerce.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Number of TSCA Pre-Manufacture Notice Reviews	1,633	1,700		Notices
Make screening level health and environmental effects data publicly available for sponsored HPV chemicals		1,300		cum. chemicals
Reduction in the current year production-adjusted Risk Screening Environmental Indicators risk-based score of releases and transfers of toxic chemicals.		9%	12%	Index
High Production Volume chemicals with complete Screening Information Data Sets (SIDS) submitted to OECD SIDS Initial Assessment Meeting		75		chemicals
Percentage of chemicals identified as highest priority by the Acute Exposure Guideline Levels (AEGLs) Program with short-term exposure limits established.			52%	Total Chemicals

Baseline: The baseline for TSCA PMNs in FY2004 is zero. (EPA receives about 1,700 PMNs per year for chemicals about to enter commerce. From 1979-2002, EPA reviewed about 40,000 PMNs. Of the 78,000 chemicals potentially in commerce, 16,618 have gone through the risk-screening process of Notice of Commencement.) The baseline for HPV measure is zero chemicals in 1998. The baseline for the RSEI measure is the index calculated for 2001. Baseline is 2002; calculation methodology by addition of AEGL values (10 minute, 1 hour, 4 hour and 24 hour exposure periods) and numbers of chemicals addressed. There is a list maintained by the AEGL FACA committee of highest priority chemicals: 99 chemicals are on List 1 which was generated at the program's inception in 1996 and 137 chemicals are highest priority on List 2 which was generated in 2001. Therefore the total of highest priority chemical stands today at 236 chemicals, however chemicals can be added or deleted from the list to fit stakeholder needs which is why we have decided to provide percentage targets. 2001 levels will serve as the baseline reference point for the percent reduction in relative risk index for chronic human health associated with environmental releases of industrial chemicals in commerce as measured by Risk Screening Environmental Indicators Model analyzing results to date. Measurement Development Plans exist for HPV, VCCEP, and New Chemicals.

### Chemical Facility Risk Reduction

In 2005 Protect human health, communities, and ecosystems from chemical risks and releases through facility risk reduction efforts and building community infrastructures.

In 2004 Protect human health, communities, and ecosystems from chemical risks and releases through facility risk reduction efforts and building community infrastructures.

In 2003 Data available in March 2004.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Number of risk management plan audits completed.	Data lag	400	400	audits

Baseline: By the end of FY 2001, 438 risk management plan audits were completed.

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

**FY 2005 Performance Measure: Percentage of TRI chemical forms submitted over the Internet using the Toxic Release Inventory Made Easy (TRI-ME) and the Central Data Exchange (CDX).**

**Performance Database:** TRI System (TRIS).

**Data Source:** Facility submissions of TRI data to EPA.

**Methods, Assumptions, and Suitability:** As part of the regular process of opening the mail at the TRI Reporting Center, submissions are immediately classified as paper or floppy disk. This information is then entered into TRIS. The identification of an electronic submission via CDX is done automatically by the software.

**QA/QC Procedures:** Currently, the mail room determines whether a submission is on paper or a floppy disk during the normal process of entering and tracking submissions. Electronic submissions via CDX are automatically tracked by the software. With an increase in electronic reporting via CDX, the manual mail room processing will be significantly reduced. Information received via hard copy is double-key entered. During the facility reconciliation process, the data entered are checked to ensure submission identification is accomplished at no less than 99 % accuracy. Accuracy is defined as accurate identification of document type.

**Data Quality Reviews:** Each month the Data Processing Center conducts data quality checks to ensure 99 % accuracy of submission information captured in TRIS.

**Data Limitations:** Occasionally, some facilities send in their forms in duplicative formats (e.g., paper, floppy, and/or through CDX). All submissions are entered into TRIS. The Data Processing Center follows the procedures outlined in the document "*Dupe Check Procedures*" to identify potential duplicate submissions. Submissions through CDX override duplicate submissions through disk and/or hard copy. Floppy disk submissions override duplicate paper copy submissions.

**Error Estimate:** The error rate for "submission-type" data capture has been assessed to be less than 1%. The quality of the data is high.

**New/Improved Performance Data or Systems:** EPA continues to identify enhancements in E-reporting capabilities via CDX.

**References:** [www.epa.gov/TRI](http://www.epa.gov/TRI)

**FY 2005 Performance Measure: Percentage of acre treatments with reduced risk pesticides.**

**Performance Database:** EPA uses an external database, Doane Marketing Research data, for this measure.

**Data Source:** Primary source is Doane Marketing Research, Inc. (a private sector research database).



**Methods, Assumptions and Suitability:** A reduced-risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced-risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water, or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced-risk). EPA's statistical and economics staff review data from Doane. Information is also compared to prior years for variations and trends as well as to determine the reasons for the variability.

Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and multiple regression procedure is used to adjust for known disproportionalities (known disproportionality refers to a non proportional sample, which means individual respondents have different weights) and ensure consistency with USDA and state acreage estimates.

**QA/QC Procedures:** All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review. Doane data are subject to extensive QA/QC procedures, documented at their websites.

**Data Quality Review:** Doane data are subject to extensive internal quality review, documented at the website. EPA's statistical and economics staff review data from Doane. Information is also compared to prior years for variations and trends as well as to determine the reasons for the variability.

**Data Limitations:** Doane data are proprietary; thus in order to release any detailed information, the Agency must obtain approval.

**Error Estimate:** Error estimates differ according to the data/database and year of sampling. Doane sampling plans and QA/QC procedures are available to the public at their website. More specific information about the data is proprietary and a subscription fee is required. Data are weighted and multiple regression procedure is used to adjust for known disproportionalities and ensure consistency with USDA and state acreage estimates.

**New/Improved Data or Systems:** These are not EPA databases; thus improvements are not known in any detail at this time.

**References:** EPA Website; EPA Annual Report; Annual Performance Plan and Annual Performance Report, <http://www.ams.usda.gov/science/pdp/download.htm>; Doane Marketing Research, Inc.: <http://www.doanemr.com>; <http://www.usda.gov/nass/pubs> and <http://www.usda.nass/nass/nassinfo>; FFDCa Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997.

**FY 2005 Performance Measure: Reduction in occurrences of carcinogenic and cholinesterase-inhibiting neurotoxic pesticide residues on a core set of 19 children's foods reported in 1994-1996**

**Performance Database:** United States Department of Agriculture (USDA) Pesticide Data Program (PDP).

**Data Source:** Data collection is conducted by the states. Information is coordinated by USDA agencies and cooperating state agencies.

**Methods, Assumptions and Suitability:** The information is collected by the states and includes statistical information on pesticide use, food consumption, and residue detections, which provide the basis for realistic dietary risk assessments and evaluation of pesticide tolerance. Pesticide residue sampling and testing procedures are managed by USDA's Agricultural Marketing Service (AMS). AMS also maintains an automated information system for pesticide residue data and publishes annual summaries of residue detections.

This measure helps provide information on the effect of EPA's regulatory actions on children's health via reduction of pesticide residues on children's foods. The assumption is that through reduction of pesticide residues on these foods, children's exposure to pesticides will be reduced; thus, the risk to their health diminished. This measure contributes to the Agency's goal of protecting human health and is aligned with the Food Quality Protection Act (FQPA) mandate of protecting children's health.

**QA/QC Procedures:** The core of USDA's PDP's QA/QC program is Standard Operating Procedures (SOPs) based on EPA's Good Laboratory Practices. At each participating laboratory, there is a quality assurance (QA) unit which operates independently from the rest of the laboratory staff. QA Plans are followed as the standard procedure, with any deviations documented extensively. Final QA review is conducted by PDP staff responsible for collating and reviewing data for conformance with SOPs. PDP staff also monitors the performance of participating laboratories through proficiency evaluation samples, quality assurance internal reviews, and on-site visits. Additionally, analytical methods have been standardized in various areas including analytical standards, laboratory operations, data handling, instrumentation and QA/QC. With the exception of California, all samples of a commodity collected for PDP are forwarded to a single laboratory, allowing greater consistency, improved QA/QC and reduced sample loss. Program plans may be accessed at <http://www.ams.usda.gov/science/pdp/SOPs.htm>.

**Data Quality Review:** In addition to having extensive QA plans to ensure reliability of the data, the PDP follows EPA's Good Laboratory Practices in standard operating procedures. A QA committee composed of quality assurance officers is responsible for annual review of program SOPs and for addressing QA/QC issues. Quality assurance units at each participating laboratory operate independently from the laboratory staff and are responsible for day-to-day quality assurance oversight. Preliminary QA/QC review is done at each participating laboratory with final review performed by PDP staff for conformance with SOPs.

**Data Limitations:** Participation in the PDP is voluntary. Sampling is limited to ten states but designed in a manner to represent the food supply nationwide. The number of sampling sites and volume vary by state. Sampling procedures are described at the website, see reference below.

**Error Estimate:** Uncertainties and other sources of error are minor and not expected to have any significant effect on performance assessment. More information is available on the website (See References).

**New/Improved Data or Systems:** These are not EPA data; thus improvements are not known in any detail at this time.

**References:** PDP Annual Reports, <http://www.ams.usda.gov/science/pdp/download.htm>; <http://www.ams.usda.gov/process/>; CFR 40 Part 160; Food Quality Protection Act (FQPA) 1996; <http://www.epahome/Standards.html>; <http://www.ams.usda.gov/science/pdp/SOPs.htm>.

**FY 2005 Performance Measures:**

- **Number of Tolerance Reassessments issued.**
- **Number of Reregistration Eligibility Decisions (REDs) issued.**
- **Number of Product Reregistration decisions issued.**
- **Tolerance Reassessments for top 20 foods eaten by children**
- **Number of inert ingredients tolerance/tolerance exemptions reassessed.**
- **Reduce decision times for REDs**

**Performance Database:** The OPPIN (Office of Pesticide Programs Information Network) consolidates various EPA program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's reregistration. Additionally, manual counts of the registrations of reduced risk pesticides are kept as backup and quality control.

**Data Source:** EPA's Pesticides Program.

**Methods, Assumptions and Suitability:** The measures are program outputs which represent the program's statutory requirements to ensure that pesticides entering the marketplace are safe for human health and the environment and when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, they do provide a means for reducing risk in that the program's safety review prevents dangerous pesticides from entering the marketplace.

**QA/QC Procedures:** All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review.

**Data Quality Review:** Management reviews the program counts and signs off on the decision document.

**Data Limitations:** None known.

**Error Estimate:** N/A. There are no errors associated with count data.

**New/Improved Data or Systems:** The OPPIN, which consolidates various pesticides program databases, will contribute to reducing the processing time for reregistration actions.

**References:** EPA Website <http://www.epa.gov/pesticides> EPA Annual Report 2002 EPA Number 735-R-03-001; 2003 Annual Performance Plan

**FY 2005 Performance Measure: Number of incidents and mortalities to terrestrial and aquatic wildlife caused by the 15 pesticides responsible for the greatest mortality to such wildlife.**

**Performance Database:** The Ecological Incident Information System (EIIS) is a national database of information on poisoning incidents of non-target plants and animals caused by pesticide use. The Environmental Fate and Effects staff for Pesticide Programs maintain this database.

**Data Source:** Data are extracted from written reports of fish and wildlife incidents submitted to the Agency by pesticide registrants under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2), as well as incident reports voluntarily submitted by state and Federal agencies involved in investigating such incidents.

**Methods, Assumptions and Suitability:** This measure helps to provide information on the effect of EPA's regulatory actions on the well being of fish and wildlife. The assumption is that the number of incidents and mortalities to fish and wildlife caused by pesticides will decrease when use of those pesticides are curtailed or eliminated.

**QA/QC Procedures:** EPA employs a process to ensure data quality for this measure which begins before entering an incident into the database. A database program is used to screen for records already in the database with similar locations and dates. Similar records are then individually reviewed to prevent duplicate reporting. After each record is entered into the EIIS database, an incident report is printed that contains all the data entered into the database. A staff member, other than the one who entered the data, then reviews the information in the report and compares it to the original source report to verify data quality. Scientists using the incident database are also encouraged to report any inaccuracies they find in the database for correction.

**Data Quality Review:** Internally and externally conducted data quality reviews related to data entry are ongoing. EPA follows a quality assurance plan for accurately extracting data from reports and entering it into the EIIS database. This quality assurance plan is described in Appendix D of the Quality Management Plan for pesticides programs. When resources allow incorporation of wildlife data from private organizations, such as the American Bird Conservancy, the new data and EIIS data are reviewed for quality during data entry using the same standards.

**Data Limitations:** This measure is designed to monitor trends in the numbers of acute poisoning events reported to the Agency. Because the data are obtained, in part, through voluntary reporting, the numbers of reported incidents may not accurately reflect the numbers of actual incidents. Therefore, it is important to consider the possible factors influencing changes in incident reporting rates over time when evaluating this measure.

**Error Estimate:** Moving average counts of number of incidents per year may be interpreted as a relative index of the frequency of adverse effects that pesticides are causing to fish and wildlife from acute toxicity effects. The indicator numbers are subject to under-reporting, but trends in the numbers over time may indicate if the overall level of adverse acute effects is improving or getting worse. Even so, if there is an increase in bird kills since the baseline year, it may be due to better tracking/reporting of kills rather than an increase or change in use of a pesticide.

**New/Improved Data or Systems:** The EPA is currently conducting a project with the American Bird Conservancy, reviewing the data in its Avian Incident Monitoring System on bird kill incidents caused by pesticides. These data will be incorporated into the EIIS. The project is expected to improve the quantity and quality of data in the EIIS database on avian incidents.

**References:** The Ecological Incident Information System (EIIS) is an internal EPA database. Federal Insecticide Fungicide and Rodenticide Act (FIFRA), Section 6(a)(2).

QMP: Quality Management Plan for the Office of Pesticides Program, May 20, 2000

**FY 2005 Performance Measures:**

- **Number of registrations of reduced risk pesticides registered (Register safer chemicals and biopesticides).**
- **Number of new (active ingredients) conventional pesticides registered (New Chemicals)(Cumulative).**
- **Number of conventional new uses registered (New Uses)(Cumulative).**
- **Number of new uses for previously registered antimicrobial products.**
- **Maintain timeliness of Section 18 Emergency Exemption Decisions.**
- **Reduce registration decision times for reduced risk chemicals**

**Performance Database:** The OPPIN (Office of Pesticide Programs Information Network) consolidates various pesticides program databases. It is maintained by the EPA and tracks regulatory data submissions and studies, organized by scientific discipline, which are submitted by the registrant in support of a pesticide's registration. Additionally, manual counts of the registrations of reduced risk pesticides are maintained for quality control

**Data Source:** Pesticide program reviewers update the status of the submissions and studies as they are received and as work is completed by the reviewers. The status indicates whether the application is ready for review, the application is in the process of review, or the review has been completed.

**Methods, Assumptions and Suitability:** The measures are program outputs which when finalized, represent the program's statutory requirements to ensure: 1) that pesticides entering the marketplace are safe for human health and the environment, and 2) when used in accordance with the packaging label present a reasonable certainty of no harm. While program outputs are not the best measures of risk reduction, they do provide a means for reducing risk, such that the program's safety review prevents dangerous pesticides from entering the marketplace.

**QA/QC Procedures:** A reduced risk pesticide must meet the criteria set forth in Pesticide Registration Notice 97-3, September 4, 1997. Reduced risk pesticides include those which reduce the risks to human health; reduce the risks to non-target organisms; reduce the potential for contamination of groundwater, surface water or other valued environmental resources; and/or broaden the adoption of integrated pest management strategies, or make such strategies more available or more effective. In addition, biopesticides are generally considered safer (and thus reduced risk). All registration actions must employ sound science and meet the Food Quality Protection Act (FQPA) new safety standard. All risk assessments are subject to public and scientific peer review.

**Data Quality Review:** These are program outputs. EPA staff and management review the program outputs in accordance with established policy for the registration of reduced-risk pesticides as set forth in Pesticide Regulation Notice 97-3, September 4, 1997.

**Data Limitations:** None. All required data must be submitted for the risk assessments before the pesticide, including a reduced risk pesticide, is registered. If data are not submitted, the pesticide is not registered. As stated above, a reduced risk pesticide must meet the criteria set forth in PRN 97-3 and all registrations must meet FQPA safety requirements. If a pesticide does not meet these criteria, it is not registered. If an application for a reduced risk pesticide does not meet the reduced risk criteria, it is reviewed as a conventional active ingredient.

**Error Estimate:** N/A

**New/Improved Data or Systems:** The OPPIN (Office of Pesticide Programs Information Network), which consolidates various pesticides program databases, will reduce the processing time for registration actions.

**References:** FIFRA Sec 3(c)(5); FFDCFA Sec 408(a)(2); EPA Pesticide Registration Notice 97-3, September 4, 1997; Food Quality Protection Act (FQPA) 1996;

**FY 2005 Performance Measure:** **Number of children aged 1-5 years with elevated blood lead levels (>10 ug/dL).** *This is the level that CDC defines as 'elevated' and indicative of the need for intervention.*

**Performance Database:** Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES).

**Data Source:** The National Health and Nutrition Examination Survey is a coordinated program of studies designed to assess the health and nutritional status of adults and children in the U.S. The program began in the early 1960s and continues. The survey examines a nationally representative sample of approximately 5,000 people each year located across the U.S.

**Methods, Assumptions, and Suitability:** Detailed interview questions cover areas related to demographic, socio-economic, dietary, and health-related questions. The survey also includes an extensive medical and dental examination of participants, physiological measurements, and laboratory tests. Specific laboratory measurements of environmental interest include: heavy metals (lead, cadmium, and mercury), VOC exposures, phthalates, organophosphates (OPs), pesticides and their metabolites, non-persistent pesticides, dioxins/furans and polycyclic aromatic hydrocarbons (PAHs). NHANES is unique in that it links laboratory-derived measurements of exposure (urine, blood etc.) to questionnaire responses and results of physical exams.

CDC has published both the "National Report on Human Exposure to Environmental Chemicals," (March 2001) and the "Second National Report on Human Exposure to Environmental Chemicals" (January 2003), which reflect findings from NHANES, including the body burden of lead and other pollutants measured in the blood stream or urine. These reports provide ongoing surveillance of the U.S. population's exposure to environmental chemicals. The 2001 report provides measurements of exposure to 27 chemicals based on blood and urine samples from people participating in NHANES 1999. The 2003 Report expands the number of

chemicals to 100 (in order to include carcinogenic volatile organic compounds, carcinogenic PAHs, dioxins and furans, PCBs, trihalomethanes, haloacetic acids, and carbamate and organochlorine pesticides). Future reports will provide additional details on exposure among different populations -- stratifying results by gender, race/ethnicity, age, urban/rural residence, education level, income, and other characteristics. CDC will track these indicators over time. Data will assist both public health officials and regulators in analyzing: 1) trends over time; 2) the effectiveness of public health efforts; and 3) exposure variations among sub-populations.

**QA/QC Procedures:** Quality assurance plans are available from both CDC and the contractor, WESTAT, as outlined on the web site <<http://www.cdc.gov/nchs/nhanes.htm>> under the NHANES section.

**Data Quality Reviews:** CDC follows standardized survey instrument procedures to collect data to promote data quality, and data are subjected to rigorous QA/QC review. CDC/NCHS has an elaborate data quality checking procedure outlined on the web site <<http://www.cdc.gov/nchs/nhanes.htm>> under the NHANES section.

**Data Limitations:** The NHANES survey uses two steps, a questionnaire and a physical exam. For this reason, there are sometimes different numbers of subjects in the interview and examinations and special weighting techniques are needed. Additionally, the number of records in each data file varies depending on gender and age profiles for the specific components. Demographic information is collected but not available at the highest level of detail in order to protect privacy. Body burden data are evidence of human exposure to toxic substances; however, linkages between evidence of exposure and source of exposure have yet to be made for many substances. In the case of lead, the correlation is strongly documented.

**Error Estimate:** Because NHANES is based on a complex multi-stage sample design, appropriate sampling weights should be used in analyses to produce national estimates. Several statistical methodologies can be used to account for unequal probability of the selection of sample persons. The methodologies and appropriate weights are provided at [www.cdc.gov/nchs/about/major/nhanes/nhanes3/cdrom/nchs/MANUALS/NH3GUIDE](http://www.cdc.gov/nchs/about/major/nhanes/nhanes3/cdrom/nchs/MANUALS/NH3GUIDE) to help generate appropriate error estimates.

**New/Improved Data or Systems:** NHANES has moved to an annual schedule. The sample design allows for limited estimates to be produced on an annual basis and more detailed estimates to be produced on 3-year samples.

**References:** "National Report on Human Exposure to Environmental Chemicals," (NCEH Publication Number 01-0164, Atlanta, GA: March 2001), [On the web at <http://www.cdc.gov/nchs/nhanes.htm> or <http://www.cdc.gov/nceh/dls/report/>]; more extensive findings from NHANES are in the "Second National Report on Human Exposure to Environmental Chemicals" (NCEH Publication Number 03-0022: Atlanta, GA January 2003) [On the web at [<http://www.cdc.gov/nchs/nhanes.htm>, or <http://www.cdc.gov/exposurereport/>].

**FY 2005 Performance Measure:** Reduce the potential for risks from leaks and spills by ensuring the safe disposal of large capacitors and transformers containing polychlorinated biphenyls (PCBs).

**Performance Database:** PCB Annual Report Database.

**Data Source:** Annual Reports from commercial storers and disposers of PCB Waste.

**Methods, Assumptions, and Suitability:** Data provide a baseline for the amount of safe disposal of PCB waste annually. By ensuring safe disposal of PCBs in equipment such as transformers and capacitors coming out of service, and contaminated media such as soil, and structures from remediation activities, the Agency is reducing the exposure risk of PCBs that are either already in the environment or may be released to the environment through spills or leaks.

**QA/QC Procedures:** The Agency reviews, transcribes, and assembles data into the Annual Report Database.

**Data Quality Reviews:** The Agency contacts data reporters, when needed, for clarification of data submitted.

**Data Limitations:** Data limitations include missing submissions from commercial storers and disposers, and inaccurate submissions. PCB-Contaminated Transformers, of PCB concentrations 50 to 499 parts per million (ppm), and those that are 500 ppm PCBs or greater are not distinguished in the data. Similarly, large and small capacitors of PCB waste may not be differentiated. Data are collected for the previous calendar year on July 1 of the next year creating a lag of approximately one year. Despite these limitations, the data do provide the only estimate of the amount of PCB waste disposed annually.

**Error Estimate:** N/A

**New/Improved Data or Systems:** None

**References:** U.S EPA, Office of Pollution Prevention and Toxics, National Program Chemicals Program, PCB Annual Report for Storage and Disposal of PCB Waste.

**FY 2005 Performance Measure: Percent reduction in relative risk index for chronic human health associated with environmental releases of industrial chemicals in commerce as measured by Risk Screening Environmental Indicators (RSEI) Model.**

**Performance Database:** The RSEI Model uses annual reporting from individual industrial facilities along with a variety of other information to evaluate chemical emissions and other waste management activities. RSEI incorporates detailed data from EPA's Toxics Release Inventory (TRI) and Integrated Risk Information System, the U.S. Census, and many other sources. Due to a TRI data lag, performance data will be unavailable for this measure when the FY 2005 Annual Performance Report is prepared. The data will be available for the FY 2007 report.

**Data Source:** The wide variety of data used within RSEI were collected by Federal Agencies (U.S. Census Bureau, EPA, U.S. Geological Survey, Commerce Dept. – National Oceanographic Atmospheric Administration, Dept. of Interior - U.S. Fish and Wildlife), state agencies (air emissions and stack data, fishing license data), and research organizations (Electric Power Research Institute (EPRI), etc.) for a variety of national/state programmatic and regulatory



purposes, and for industry-specific measurements.

**Methods, Assumptions and Suitability:** The RSEI Model generates unique numerical values known as “Indicator Elements” using the factors pertaining to surrogate dose, toxicity and exposed population. Indicator Elements are unitless (like an index number, they can be compared to one-another but do not reflect *actual* risk), but proportional to the modeled relative risk of each release (incrementally higher numbers reflect greater estimated risk). Indicator Elements are risk-related measures generated for every possible combination of reporting facility, chemical, release medium, and exposure pathway (inhalation or ingestion). Each Indicator Element represents a unique release-exposure event and together these form the building blocks to describe exposure scenarios of interest. These Indicator Elements are summed in various ways to represent the risk-related results for releases users are interested in assessing. RSEI results are for comparative purposes and only meaningful when compared to other scores produced by RSEI. The measure is appropriate for year-to-year comparisons of performance. Depending on how the user wishes to aggregate, RSEI can address trends nationally, regionally, by state or smaller geographic areas.

**QA/QC Procedures:** EPA annually updates the data sources used within the RSEI model to take advantage of the most recent and reliable data. For example, TRI facilities self-report release data and occasionally make errors. TRI has QC functions and an error-correction mechanism for reporting such mistakes. Because of the unique screening-level abilities of the RSEI model, it is possible to identify other likely reporting errors and these are forwarded to the TRI Program for resolution. In developing the RSEI model, OPPT has performed numerous Q/C checks on various types of data. For instance, locational data for on-site and off-site facilities have been checked and corrected, and this information is being supplied to the Office of Environmental Information (OEI) and the Envirofacts database.

**Data Quality Reviews:** RSEI depends upon a broad array of data resources, each of which has gone through a quality review process tailored to the specific data and managed by the providers of the data sources. RSEI includes data from the Toxics Release Inventory (TRI), Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST), U.S. Census, etc. All were collected for regulatory or programmatic purposes and are of sufficient quality to be used by EPA, other Federal agencies, and state regulatory agencies. Over the course of its development, RSEI has been the subject of three reviews by EPA’s Science Advisory Board (U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Available at <http://www.epa.gov/opptintr/rsei/faqs.html>).

The RSEI model has undergone continuous upgrading since the 1997 SAB Review. Toxicity weighting methodology was completely revised and subject to a second positive review by SAB (in collaboration with EPA’s Civil Rights program); air methodology was revised and ground-truthed using New York data to demonstrate high confidence; water methodology has been revised in collaboration with EPA’s Water program. When the land methodology has been reviewed and revised, EPA will have completed its formal, written response to the 1997 SAB Review.

**Data Limitations:** RSEI relies on data from a variety of EPA and other sources. TRI data may have errors that are not corrected in the standard TRI QC process. In the past, RSEI has

identified some of these errors and corrections have been made by reporting companies. Drinking water intake locations are not available for all intakes nationwide. Where intake locations are known only at the county-level, RSEI distributes the drinking water population between all stream reaches in that county. This could increase or decrease the RSEI risk-related results depending on the pattern of TRI releases on the stream reaches in that county. If the actual uptake location is on a highly polluted stream reach, this approach would underestimate risk by distributing the drinking water population to less-polluted reaches. In coastal areas, Publicly Owned Treatment Works (POTW) water releases may go directly to the ocean, rather than nearby streams. EPA is in the process of systematically correcting potential errors regarding POTW water releases. These examples are illustrative of the data quality checks and methodological improvements that are part of the RSEI development effort. Data sources are updated annually and all RSEI values are recalculated on an annual basis.

**Error Estimate:** In developing the RSEI methodology, both sensitivity analyses and groundtruthing studies have been used to address model accuracy (documentation is provided on the RSEI Home Page - [www.epa.gov/oppt/env\\_ind/](http://www.epa.gov/oppt/env_ind/)). For example, groundtruthing of the air modeling performed by RSEI compared to site-specific regulatory modeling done by the state of New York showed virtually identical results in both rank order and magnitude. However, the complexity of modeling performed in RSEI, coupled with un-quantified data limitations, limits a precise estimation of errors that may either over- or under-estimate risk-related results.

**New/Improved Data or Systems:** The program regularly tracks improvements in other Agency databases (e.g., SDWIS and Reach File databases) and incorporates newer data into the RSEI databases. Such improvements can also lead to methodological modifications in the model. Corrections in TRI reporting data for all previous years are captured by the annual updates of the RSEI model.

**References:** The methodologies used in RSEI were documented for the 1997 review by the EPA Science Advisory Board. The Agency has provided this and other technical documentation on the RSEI Home Page. The Agency is revising the existing methodology documents concurrent with the second beta release of RSEI Version 2.0. [RSEI Home Page - [www.epa.gov/oppt/env\\_ind/](http://www.epa.gov/oppt/env_ind/)]

U.S. EPA Office of Pollution Prevention and Toxics, Risk Screening Environmental Indicators Model, Peer Reviews. Available at <http://www.epa.gov/opptintr/rsei/faqs.html>

RSEI Methodology Document (describes data and methods used in RSEI Modeling)

RSEI User's Manual (PDF, 1.5 MB) explains all of the functions of the model, the data used, and contains tutorials to walk the new user through common RSEI tasks ([http://www.epa.gov/opptintr/rsei/docs/users\\_manual.pdf](http://www.epa.gov/opptintr/rsei/docs/users_manual.pdf)).

A more general overview of the model can be found in the RSEI Fact Sheet (PDF, 23 KB) ([http://www.epa.gov/opptintr/rsei/docs/factsheet\\_v2-1.pdf](http://www.epa.gov/opptintr/rsei/docs/factsheet_v2-1.pdf)).

There are also seven Technical Appendices that accompany these two documents and provide additional information on the data used in the model. The Appendices are as follows:

Technical Appendix A (PDF, 121 KB) - Listing of All Toxicity Weights for TRI Chemicals and Chemical Categories

Technical Appendix B (PDF, 290 KB) - Physicochemical Properties for TRI Chemicals and Chemical Categories

Technical Appendix C (PDF, 40 KB) - Derivation of Model Exposure Parameters

Technical Appendix D (PDF, 71 KB) - Locational Data for TRI Reporting Facilities and Off-site Facilities

Technical Appendix E (PDF, 44 KB) - Derivation of Stack Parameter Data

Technical Appendix F (PDF, 84KB) - Summary of Differences Between RSEI Data and TRI Public Data Release

**FY 2005 Performance Measure: Establish short-term exposure limits for 52 percent of chemicals identified as highest priority by the Acute Exposure Guideline Levels (AEGL) Program.**

**Performance Database:** Performance is measured by the cumulative number of chemicals with “Proposed”, “Interim”, and/or “Final” AEGL values.

**Data Source:** EPA manages a Federal Advisory Committee Act (FACA) committee that reviews short term exposure values for extremely hazardous chemicals. The supporting data, from both published and unpublished sources and from which the AEGL values are derived, are collected, evaluated, and summarized by FACA Chemical Managers and Oak Ridge National Laboratory’s scientists. Proposed AEGL values are published for public comment in the Federal Register. After reviewing public comment, interim values are presented to the AEGL Subcommittee of the National Academies of Sciences (NAS) for review and comment. After review and comment resolution, the National Research Council under the auspices of the National Academies of Sciences (NAS) publishes the values as final.

**Methods, Assumptions, and Suitability:** The work of the National Advisory Committee’s Acute Exposure Guideline Levels (NAC/AEGL) adheres to the 1993 U.S. National Research Council/National Academies of Sciences (NRC/NAS) publication *Guidelines for Developing Community Emergency Exposure Levels for Hazardous Substances*. NAC/AEGL, in cooperation with the National Academy of Sciences’ Subcommittee on AEGLs, have developed standard operating procedures (SOPs), which are followed by the program. These have been published by the National Academies Press and are referenced below.

AEGL values approved as “proposed” and “interim” by the NAC/AEGL FACA Committee and “final” by the National Academies of Sciences represent the measure of the performance. The work is assumed to be completed at the time of final approval of the AEGL values by the NAS.

**QA/QC Procedures:** QA/QC procedures include public comment via the Federal Register process, review and approval by the FACA committee, and review and approval by the NAS/AEGL committee and their external reviewers.

**Data Quality Review:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** This is the first time acute exposure values for extremely hazardous chemicals have been established according to a standardized process and put through such a rigorous review.

**References:** Standing Operating Procedures for Developing Acute Exposure Guideline Levels for Hazardous Chemicals, National Academy Press, Washington, DC 2001 (<http://www.nap.edu/books/030907553X/html/>).

**FY 2005 Performance Measure:** Number of risk management plan audits completed

**Performance Database:** There is no database for this measure.

**Data Source:** EPA's Regional offices and the states provide the data to EPA headquarters.

**Methods, Assumptions and Suitability:** Data are collected and analyzed by surveying EPA's Regional offices to determine how many audits of facilities' risk management plans (RMPs) have been completed.

**QA/QC Procedures:** Data are collected from states by EPA's Regional offices, with review at the Regional and Headquarters' levels.

**Data Quality Review:** Data quality is evaluated by both Regional and Headquarters' personnel.

**Data Limitations:** Data quality is dependent on completeness and accuracy of the data provided by state programs.

**Error Estimate:** Not calculated.

**New/Improved Data or Systems:** N/A

**Reference:** N/A

## **EFFICIENCY MEASURES/MEASUREMENT DEVELOPMENT PLANS**

### **Pesticides Program**

In addition to the newly established efficiency measures, the Office of Pesticide Programs is creating a measures workplan to identify and plan for the development of outcome measures and indicators for both human health and the environment. Meaningful measures for pesticides require coordination and cooperation with other organizations for data and information. The workplan will identify these partnerships and lay out the steps needed to develop outcome measures and indicators for program goals.

The efficiency measures presented for this goal set targets for improving the decision-making times. For example, by 2006, the Agency will reduce reregistration time (issuance of

Re-registration Eligibility Decision, or RED) by ten percent from the FY 2002 baseline, from the initiation of public participation to the signed RED. Each year through 2008, EPA will make safer pest management tools available sooner, and during 2005 will reduce the registration time for new active ingredients which meet the criteria for reduced risk pesticides by three percent. By 2008, EPA will reduce registration decision times by ten percent for conventional new active ingredients and five percent for reduced-risk new active ingredients (including biopesticides) from the FY 2002 baseline.

The processing times for reviews and decisions are tracked through the new Office of Pesticides Programs Information Network (OPPIN) computer system, which came on-line in FY 2003. Where process re-designs have already brought about significant savings (the section 18 process and the reduced risk registration process), the target will be to maintain the shorter times through 2008.

### **Toxics Program**

Through 2008, the Agency plans to reduce its per-chemical review costs from 2002 levels. This will be accomplished by training chemical developers to use EPA's risk screening tools early in research and development so that the Agency receives at least 40 pre-screened PMNs per year. For the New Chemicals Program, the next step will be to track trends associated with the review of chemicals undergoing expedited review under the Sustainable Futures Initiative. The Initiative is intended to create cost savings for industry; however the "pre-screening" model should also provide efficiencies for EPA processes. Development of measures is referenced in the Program Assessment Rating Tool (PART) summary in the Special Analysis section.

### **COORDINATION WITH OTHER AGENCIES**

Coordination with State lead agencies and with the U. S. Department of Agriculture (USDA) provides added impetus to the implementation of the Certification and Training program. States also provide essential activities in developing and implementing the Endangered Species and Worker Protection programs. States are involved in numerous special projects and investigations, including emergency response efforts. The Regions provide technical guidance and assistance to the States and Tribes in the implementation of all pesticide program activities.

EPA uses a range of outreach and coordination approaches for pesticide users, agencies implementing various pesticide programs and projects, and the general public. Outreach and coordination activities are essential to protect workers and endangered species; to provide training of pesticide applicators; to promote integrated pest management and environmental stewardship; and to support compliance through EPA's regional programs and those of the States and Tribes.

In addition to the training that EPA provides to farm workers and restricted use pesticide applicators, EPA works with the State Cooperative Extension Services designing and providing specialized training for various groups. Such training includes instructing private applicators on the proper use of personal protective equipment and application equipment calibration, handling spill and injury situations, farm family safety, preventing pesticide spray drift, and pesticide and

container disposal. Other specialized training is provided to public works employees on grounds maintenance, to pesticide control operators on proper insect identification, and on weed control for agribusiness.

EPA coordinates with and uses information from a variety of Federal, State and international organizations and agencies in our efforts to protect the safety of America's health and environment from hazardous or higher risk pesticides.

In May 1991, the United States Department of Agriculture (USDA) implemented the Pesticide Data Program (PDP) to collect objective and statistically reliable data on pesticide residues on food commodities. This action was in response to public concern about the effects of pesticides on human health and environmental quality. EPA uses PDP data to improve dietary risk assessment to support the registration of pesticides for minor crop uses.

PDP is critical to implementing the Food Quality Protection Act. The system provides improved data collection of pesticide residues, standardized analytical and reporting methods, and sampling of foods most likely consumed by infants and children. PDP sampling, residue, testing and data reporting are coordinated by the Agricultural Marketing Service using cooperative agreements with ten participating States representing all regions of the country. PDP serves as a showcase for Federal-State cooperation on pesticide and food safety issues.

FQPA requires EPA to consult with other government agencies on major decisions. EPA, USDA and FDA work closely together using both a Memoranda of Understanding and working committees to deal with a variety of issues that affect the involved agencies' missions. For example, these agencies work together on residue testing programs and on enforcement actions that involve pesticide residues on food, and we coordinate our review of antimicrobial pesticides.

While EPA is responsible for making registration and tolerance decisions, the Agency relies on others to carry out some of the enforcement activities. Registration-related requirements under FIFRA are enforced by the States. The Department of Health and Human Services/Food and Drug Administration enforces tolerances for most foods and the United States Department of Agriculture/Food Safety and Inspection Service enforces tolerances for meat, poultry and some egg products.

Internationally, the Agency collaborates with the Intergovernmental Forum on Chemical Safety (IFCS), the CODEX Alimentarius Commission, the North American Commission on Environmental Cooperation (NACEC), the Organization for Economic Cooperation and Development (OECD) and the North American Free Trade Agreement (NAFTA) Commission. These activities serve to coordinate policies, harmonize guidelines, share information, correct deficiencies, build other nations' capacity to reduce risk, develop strategies to deal with potentially harmful pesticides and develop greater confidence in the safety of the food supply.

One of the Agency's most valuable partners on pesticide issues is the Pesticide Program Dialogue Committee (PPDC), which brings together a broad cross-section of knowledgeable individuals from organizations representing divergent views to discuss pesticide regulatory, policy and implementation issues. The PPDC consists of members from industry/trade

associations, pesticide user and commodity groups, consumer and environmental/public interest groups and others.

The PPDC provides a structured environment for meaningful information exchanges and consensus building discussions, keeping the public involved in decisions that affect them. Dialogue with outside groups is essential if the Agency is to remain responsive to the needs of the affected public, growers and industry organizations.

EPA relies on data from HHS to help assess the risk of pesticides to children. Other collaborative efforts that go beyond our reliance on the data they collect include developing and validating methods to analyze domestic and imported food samples for organophosphates, carcinogens, neurotoxins and other chemicals of concern. These joint efforts protect Americans from unhealthful pesticide residue levels.

EPA's chemical testing data provides information for the Occupational Safety and Health Administration's (OSHA) worker protection programs, the National Institute for Occupational Safety and Health (NIOSH) for research, and the Consumer Product Safety Commission (CPSC) for informing consumers about products through labeling. EPA frequently consults with these Agencies on project design, progress and the results of chemical testing projects. The National Institute of Occupational Safety and Health (NIOSH), the Mine Safety and Health Association (MSHA) and EPA meet monthly to coordinate on issues such as mercury recycling, a proposed rule on worker protection for acrylamide, and issues relating to vermiculite/asbestos at a Superfund site in Montana. The Agency of Toxic Substances and Disease Registry (ATSDR) has asked EPA to develop TSCA Section 4 testing actions for certain chemicals that are found frequently at Superfund sites.

The Agency will work with a full range of stakeholders on homeland security issues: USDA, CDC, other federal agencies, industry and the scientific community. Review of the agents that may be effective against anthrax has involved GSA, State Department, UAMRIID, FDA, EOSA, USPS, and others, and this effort will build on this network.

The Acute Exposure Guidelines (AEG) program is a collaborative effort that includes ten Federal agencies (EPA, DHS, DOE, DOD, DOT, NIOSH, OSHA, CDC, ATSDR, and FDA), numerous State agencies, private industry, academia, emergency medical associations, unions, and other organizations in the private sector. The program also has been supported internationally by the OECD and includes active participation by the Netherlands, Germany and France.

The success of EPA's lead program is due in part to effective coordination with other Federal agencies, States and Indian Tribes through the President's Task Force on Environmental Health Risks and Safety Risks to Children. EPA will coordinate with HUD to clarify how new rules may affect existing EPA and HUD regulatory programs, and with the Federal Highway Administration of the Department of Transportation and the Occupational Safety and Health Administration (OSHA) of the Department of Labor on worker protection issues. EPA will continue to work closely with State and Federally recognized Tribes to ensure that authorized State and Tribal programs continue to comply with requirements established under TSCA, that the ongoing Federal accreditation certification and training program for lead professionals is

administered effectively, and that the States and Tribes adopt the Renovation and Remodeling and the Buildings and Structures Rules when these rules become effective.

EPA has a Memorandum of Understanding (MOU) with HUD on coordination of efforts on lead-based paint issues. As a result of the MOU, EPA and HUD have co-chaired the President's Task Force since 1997. There are 14 other Federal agencies including CDC and the Department of Defense (DOD) on the Task Force. In another joint effort, EPA, HUD, and the National Institutes of Standards and Technology (NIST) have been working to identify reliable at-home test kits for lead-based paint to recommend to do-it-yourself renovators. HUD and EPA also have a joint Lead Hotline and share enforcement of the Disclosure Rule.

Mitigation of existing risk is a common interest for other Federal agencies addressing issues of asbestos and PCBs. EPA will continue to coordinate interagency strategies for assessing and managing potential risks from asbestos and other fibers. Coordination on safe PCB disposal is an area of ongoing emphasis with the Department of Defense (DOD), and particularly with the U.S. Navy, which has special concerns regarding PCBs encountered during ship scrapping. PCBs and mercury storage and safe disposal are also important issues requiring coordination with the Department of Energy and DOD as they develop alternatives and explore better technologies for storing and disposing high risk chemicals.

Since many agencies at all levels of government have authority to regulate and implement aspects of hazardous materials safety programs, coordination is essential for the success of EPA initiatives. On the chemical accident preparedness and prevention side, interagency coordination remains a critical factor in accomplishing the goals of the Risk Management and EPCRA programs. The Agency's role in carrying out these initiatives is to provide leadership and support. EPA works in partnership with States and local governments and other organizations to promote actions to reduce risk. EPA provides technical assistance and tools to States and LEPCs so they can better utilize the information on chemical hazards and risks available to them. In addition, through the rulemaking process, EPA works closely with our Federal partners (DOJ, OSHA, and DOT) and with States to ensure compatibility with new and existing accident preparedness and prevention initiatives. Close coordination and a cooperative working relationship is also required to effectively meet our responsibilities in the Chemical Safety program, most importantly where they involve the Chemical Safety Board (CSB). EPA has completed a memorandum of understanding with the CSB, which further delineates this working relationship.

The independent CSB places responsibilities on the Agency with regard to chemical safety and accident prevention. The same Clean Air Act provisions that established the CSB require EPA to respond to the Board's recommendations and to provide support for its activities. In 2005, EPA expects to continue to respond to CSB recommendations that result from investigations. For example, EPA has worked with the Occupational Safety and Health Administration and the CSB on two recommendations associated with reactive chemical process safety arising from the Morton International chemical accident in New Jersey.

To conclude the international agreements on POPs, heavy metals and PIC substances, EPA must continue to coordinate with other Federal agencies and external stakeholders, such as Congressional staff, industry, and environmental groups, to convey the U.S. approach and solicit constructive criticism. EPA needs to ensure that the list of chemicals and the criteria and process



for evaluating future chemicals for possible international controls are based on sound science. To illustrate, the Agency may typically coordinate with the Food and Drug Administration (FDA), FDA's National Toxicology Program, the Centers for Disease Control/Agency for Toxic Substances and Disease Registry (CDC/ATSDR), the National Institute of Environmental Health Sciences (NIEHS) and/or the Consumer Product Safety Commission (CPSC) on matters relating to OECD test guideline harmonization.

EPA's objective is to promote improved health and environmental protection, both domestically and worldwide. The success of this objective is dependent on successful coordination not only with other countries, but with various international organizations such as the Intergovernmental Forum on Chemical Safety (IFCS), the North American Commission on Environmental Cooperation (NACEC), the Organization for Economic Cooperation and Development (OECD), and the CODEX Alimentarius Commission. The North American Free Trade Agreement and cooperation with Canada and Mexico play an integral part in the harmonization of data requirements.

### **STATUTORY AUTHORITIES**

1909 Boundary Waters Agreement  
1978 U.S./Canada Great Lakes Water Quality Agreement  
1989 US/USSR Agreement on Pollution  
1991 U.S./Canada Air Quality Agreement  
1996 Habitat Agenda, paragraph 43bb  
Chemical Safety Information, Site Security and Fuels Regulatory Relief Act  
Clean Air Act (CAA)  
Clean Water Act (CWA) (33 U.S.C. 1251\_1387)]  
Emergency Planning and Community Right-To-Know Act  
Endangered Species Act  
Federal Food, Drug and Cosmetic Act (FFDCA)  
Federal Fungicide, Insecticide and Rodenticide Act (FIFRA)  
Food Quality Protection Act (FQPA) of 1996  
North American Agreement on Environmental Cooperation (NAAEC)  
North American Free Trade Agreement  
Pollution Prevention Act  
Resource Conservation and Recovery Act (RCRA)  
Section 112r, Accidental Release Provisions of the Clean Air Act Amendments of 1990  
Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986  
Toxic Substances Control Act (TSCA)  
U.S./Canada Agreements on Arctic Cooperation  
World Trade Organization Agreements

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Healthy Communities and Ecosystems

**OBJECTIVE:** Communities

Sustain, clean up, and restore communities and the ecological systems that support them.

#### Resource Summary (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
<b>Communities</b>	<b>\$313,167.7</b>	<b>\$317,572.9</b>	<b>\$319,958.4</b>	<b>\$2,385.4</b>
Environmental Program & Management	\$64,392.8	\$83,379.9	\$85,676.7	\$2,296.80
Hazardous Substance Superfund	\$2,324.5	\$1,031.4	\$1,039.9	\$8.50
Science & Technology	\$75.1	\$0.0	\$0.0	\$0.00
State and Tribal Assistance Grants	\$243,985.7	\$230,500.0	\$230,500.0	\$0.00
Building and Facilities	\$744.1	\$666.8	\$721.7	\$54.9
Inspector General	\$1,645.5	\$1,994.9	\$2,020.1	\$25.2
Total Workyears	327.5	372.0	369.6	(2.4)

#### Program Project (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Children and other Sensitive Populations	\$3,074.7	\$6,710.4	\$6,801.1	\$90.7
Congressionally Mandated Projects	\$140.8	\$0.0	\$0.0	\$0.0
Commission for Environmental Cooperation	\$4,069.6	\$3,544.0	\$3,531.7	(\$12.3)
Categorical Grant: Brownfields	\$48,605.7	\$60,000.0	\$60,000.0	\$0.0
Brownfields	\$22,613.4	\$27,820.6	\$28,002.3	\$181.7
Environment and Trade	\$1,769.6	\$1,702.6	\$1,723.1	\$20.5
Environmental Justice	\$3,813.9	\$5,044.3	\$5,130.5	\$86.2
Geographic Program: Other	\$0.0	\$0.0	\$2,000.0	\$2,000.0
Infrastructure Assistance: Brownfields Projects	\$81,953.4	\$120,500.0	\$120,500.0	\$0.0
Infrastructure Assistance: Mexico Border	\$113,426.6	\$50,000.0	\$50,000.0	\$0.0
Regulatory Innovation	\$6,724.4	\$2,541.2	\$2,642.7	\$101.5
US Mexico Border	\$4,967.7	\$6,484.4	\$5,784.8	(\$699.6)
Regional Geographic Initiatives	\$0.0	\$8,755.7	\$8,799.5	\$43.8
Administrative Projects	\$22,007.9	\$24,469.7	\$25,042.7	\$572.9
<b>TOTAL</b>	<b>\$313,167.7</b>	<b>\$317,572.9</b>	<b>\$319,958.4</b>	<b>\$2,385.4</b>

## **FY 2005 REQUEST**

### ***Results to be Achieved under this Objective***

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant and they are not traditional Superfund sites. Generally, Brownfields are not highly contaminated properties and, therefore, present lesser health risks. Economic changes over several decades have left thousands of communities with these contaminated properties and abandoned sites. Working with its state, Tribal, and local partners to meet its objective to sustain, cleanup, and restore communities and the ecological systems that support them, EPA intends to achieve the following results in FY 2005:

- assess 1,000 Brownfields properties
- clean up 60 properties using Brownfields funding
- leverage \$1.0 billion in cleanup/redevelopment funding
- leverage 5,000 jobs
- train 200 participants, placing 65 percent in jobs.

EPA's international work programs under this objective are a critical component in creating sustainable and healthy communities because pollution knows no boundaries. Many environmental threats can be linked to activities that take place along U.S. borders or through transport along air and water currents. Advancing free trade that includes environmental provisions can sustain our communities and lower potential environmental risks from air or water borne contaminants. Activities focus on the U.S.-Mexico Border region; public health problems, North American environmental issues as addressed by the Commission for Environmental Cooperation (pesticide exposure, sound management of chemicals, biodiversity, and children's health), and the negotiation and implementation free trade agreements (FTAs) that support trade without lessening environmental standards.

The FY 2005 Request includes funding for the Community Actions for a Renewed Environment (CARE) initiative, which is expected to result in measurable reduced exposures to toxic pollutants including toxic chemicals, lead, pesticides, particulates as well as asthma triggers. Expected results also include increased acres of wetlands and miles of riparian forest buffer restored and preserved. Reductions in exposures resulting from diet and subsistence living practices will also be measured. This initiative will help EPA achieve its Strategic Goals of Clean Air, Clean and Safe Water, Protecting and Restoring the Land, and Healthy Communities and Ecosystems.

In January 2001, EPA estimated water and wastewater infrastructure needs along the U.S.-Mexico border through 2020 at \$4.5 billion.<sup>65</sup> EPA will work with two key partners, the Border Environment Cooperation Commission (BECC) and the North American Development Bank, which manages the Border Environmental Infrastructure Fund (BEIF), to support the financing and construction of water and wastewater treatment facilities. For FY 2005, the

---

<sup>65</sup> U.S. EPA Office of Water. "Status Report on the Water and Wastewater Infrastructure Program for the U.S.-Mexico Borderlands." January 2001. Available online at <http://www.epa.gov/OW-OWM.html/mab/mexican/usmexrpt/final1b2.pdf>

Agency has established a goal that cumulatively 1.5 million people will be protected from health risks because of the construction of adequate water and wastewater sanitation systems.

### ***Categorical Grant: Brownfields***

EPA provides both monetary and technical/legal assistance to states and Tribes developing and enhancing response programs. The response programs address contaminated sites through assessment, oversight, and other mechanisms which do not require Federal action, but need cleanup before the sites are considered for reuse. Legislation also permits the recipients to capitalize revolving loan funds, purchase insurance or develop risk sharing pools, or indemnity pools, under the states' response programs. EPA believes that building strong and effective state and Tribal programs, such as Voluntary Response Programs, will also complement efforts to address the cleanup of Brownfields properties. Since the program's inception in 1995, states, territories, and Tribes have received over \$156,000,000 for state and Tribal Response Program grants.

### ***Brownfields (EPM)***

The Brownfields program is designed to empower states, Tribes, local communities and other stakeholders in economic redevelopment to work together to prevent, assess, safely cleanup, and reuse Brownfields. Legal, administrative and resource management offices provide support to the Agency's Brownfields programs administering rent, utilities, security costs, and legal advice. EPA's Brownfields Initiative funds pilot programs and other research efforts, clarifies liability issues, enters into Federal, state, and local partnerships, conducts outreach activities, and creates job training and workforce development programs.

In addition to supporting the operations and management of the Brownfields program, funds requested will also provide financial assistance for training on hazardous waste to organizations representing the interests of state and Tribal co-implementers of the Brownfields law (SBLRBRA), and outreach support for environmental issues involving Tribal and native Alaskan villages or communities that have been disadvantaged due to perceived or real hazardous waste contamination. EPA will also provide technical assistance to communities which were awarded funding to combine smart growth policies with Brownfields redevelopment or national groups which use the funding to address general issues of vacant properties and infrastructure decisions.

PART update: The Office of Management and Budget (OMB) evaluated the Brownfields program using the Performance Assessment Rating Tool (PART) during the FY 2005 budget cycle. The program received a score of 51, which is an "adequate" rating.

OMB found that the Brownfields program is clearly articulated in its authorizing legislation, and is well managed, but that it would benefit from regular independent evaluations and a systematic strategic planning process. In addition, while the program has reached many of its performance goals, new goals, commensurate with funding, have not yet been put into place.

In response to these findings, the Administration will assess and cleanup Brownfields sites at an accelerated rate. It will also work to develop more ambitious long term assessment targets.

### ***Commission for Environmental Cooperation***

The Commission for Environmental Cooperation (CEC) was established in 1993 under the North American Agreement on Environmental Cooperation (NAAEC), a supplemental agreement to the North American Free Trade Agreement (NAFTA). The CEC consists of a Council, a Secretariat, and a Joint Public Advisory Committee. Executive Order 12915 designates the EPA Administrator as the United States representative on the Council and gives EPA lead responsibility for the U.S. Government regarding the CEC.

In FY 2005, EPA will continue to coordinate U.S. involvement in programs related to the NAAEC, including oversight of programs related to connections between trade and the environment, environmental enforcement, children's environmental health, chemicals management, and biodiversity. In addition to these specific activities, EPA will attend meetings and coordinate U.S. Government positions in response to advice of the Joint Public Advisory Committee, and coordinate meetings and respond to advice for the U.S. domestic National and Governmental Advisory Committees for the CEC. Transparency and public participation are central elements in all of CEC's work.

In FY 2005, EPA will also provide oversight, guidance, and technical support for a number of substantive CEC projects in FY 2004. For example, EPA will implement a tri-national strategic plan for biodiversity conservation, including the strategic development of a network of protected marine areas in North America. In the area of children's health and the environment, building on the 2004 review of the *Cooperative Agenda for Children's Health and the Environment in North America*<sup>66</sup>, EPA will organize programs to address children's health risks by developing educational workshops and reports on topics such as lead poisoning, asthma and respiratory diseases, and economic valuation of children's environmental health threats. EPA will continue to provide information and technical support for the annual Taking Stock publication, which CEC publishes to measure pollutant releases across North America. In the area of chemicals management, EPA will support implementing North American Regional Action Plans on Mercury; Dioxins, Furans, and Hexachlorobenzene; and Lindane.

### ***Environment and Trade***

Trade liberalization will lead to increased economic activity - with the potential for increased pollution. Environmental degradation can reach across borders, affecting the quality of the regional and global commons. For example, mercury, persistent bioaccumulative toxics, greenhouse gasses, and particulates are being carried in the atmosphere around the globe and may be contributing to the non-attainment of air quality standards. Increasing fossil fuel combustion in eastern Asia is affecting surface ozone in the U.S., and arsenic, copper, and zinc from smelting in China have appeared in Hawaii. In addition, increased shipments to the U.S. as the result of trade liberalization carry the increased potential for inadvertently contaminated products entering the U.S.

Congress, in recognition of the growing awareness of the link between trade and the environment, enacted in the Trade Promotion Authority Act of 2002 (TPA) explicit priorities and objectives for environmental issues, such as environmental reviews and capacity building. TPA

---

<sup>66</sup> Commission for Environmental Cooperation, Council Resolution 02-06: Cooperative Agenda for Children's Health and the Environment in North America, Available only on the Internet: [http://www.cec.org/pubs\\_docs](http://www.cec.org/pubs_docs).

also has provisions against lowering environmental standards to attract investment. As a result, EPA has become increasingly involved with USTR and the Department of State in developing US trade policy, as exemplified by the environmental provisions included in the NAFTA and U.S.-Jordan trade agreements.

In addition to specific obligations to enforce laws and not lower environmental standards to attract investment, TPA objectives include promoting sustainable development and consultative mechanisms to strengthen the capacity of United States' trading partners to develop and implement standards for the protection of the environment and human health. TPA also requires the US to conduct environmental reviews to predict the effects of the agreements. Although TPA includes environmental objectives for trade negotiations such as commitments to high levels of environmental protection and effective enforcement of environmental laws, many negotiating partners lack the capacity to achieve those objectives.

During FY 2002, EPA worked in an interagency process to harmonize environment and trade policy, and on that basis, negotiate new FTAs. As a result, two agreements that reached conclusion in early FY 2003 (Singapore and Chile) contain environmental text and include processes for establishing and conducting cooperative projects that harmonize environmental protection and trade. These cooperative projects are aimed at improving the environment worldwide through communicating environmental best practices and reducing the potential for global and trans-boundary pollution.

In FY 2003, the United States initiated four new free trade agreement negotiations. The countries involved, together with the countries included in the Free Trade Area of the Americas (FTAA) negotiations, comprise 10 percent of the world's population. In each case, EPA will promote the harmonization of environmental protection and trade, through negotiating the agreements and by working with partner countries to develop cooperative projects that will assist them in maintaining or improving their environmental conditions. This work will continue into FY 2005, when much of the work on cooperative projects will take place, and negotiations for additional free trade agreements are expected to begin. An additional goal in FY 2004 is to ensure that the Environment and Trade program will address an important data gap by quantifying environmental impacts of potential trade agreements, allowing us to better measure the results of our work.

Throughout FY 2004 and beyond, EPA will be heavily involved in developing and conducting environmental capacity building projects. Project discussions are being linked to upcoming trade agreements that will enhance and protect the environment. In FY 2005, EPA will continue to implement projects initiated in FY2004 and assist trade partner countries with existing capacity building resources.

### ***Environmental Justice***

EPA's environmental justice program will continue its efforts to provide education, outreach, and data availability initiatives. The Program provides a central point for the Agency to address environmental and human health concerns in minority and/or low-income communities-- segments of the population that have been disproportionately exposed to environmental harms and risks. The program will continue to manage the Agency's Environmental Justice Community Small Grants program, assisting community-based

organizations to develop solutions to local environmental issues. The Community Small Grants Program was established in 1994, and has awarded more than 973 grants of up to \$20,000 each to community-based organizations and others such as universities, Tribes, and schools. As a result, community-based organizations (i.e., grassroots groups, churches, and other nonprofit organizations) are expanding citizen involvement and awareness about exposure to environmental harms and risks, and supporting local efforts to protect families and their communities. These small grants have served as “seed-money” to empower the residents of these communities, which has allowing them to more fully participate in Government environmental decision making processes.

In support of the Agency’s environmental justice efforts, criminal investigations and civil enforcement actions will focus on industries that have repeatedly violated environmental laws in minority and/or low-income areas. During the past several years, efforts have also been made to encourage the use of alternative dispute resolution (ADR). In FY 2005, the Agency will increase its capacity to resolve disputes, through training and multi-stakeholder partnering. Through the use of ADR, the Agency expects to reduce time and resources accompanying litigation; and anticipates that decisions reached through the program will be more efficient and favorable for all parties involved.

In FY 2005, the Agency will continue to support the National Environmental Justice Advisory Council (NEJAC). The Council provides the Agency with significant input from interested stakeholders such as community-based organizations, business and industry, academic institutions, state, Tribal and local governments, non-governmental organizations, and environmental groups. Six standing subcommittees have been created around EPA’s broad statutory mandates and are sponsored by the appropriate EPA office: Air/Water; Enforcement; Health/Research; Indigenous People; International; and Waste/Facility Siting.

The Agency will also continue to chair an Interagency Working Group (IWG) composed of 11 Federal agencies to ensure that environmental justice concerns are incorporated into all Federal programs. In 2005, the IWG will continue its efforts to work collaboratively and constructively with all levels of government, and throughout the public and private sectors. The IWG will effectively address the environmental, health, economic and social challenges facing our communities through the selection of fifteen new demonstration and revitalization projects. These new projects will continue to implement the 2000 Action Agenda, which in the beginning centered on fifteen demonstration projects in diverse urban and rural communities, in virtually all regions of the nation. By FY 2003, fifteen more demonstration projects were added. At present, there are 30 existing demonstration projects throughout the country and fifteen more are expected to be created in FY 2005. Plans for FY 2005 include selecting projects to achieve a variety of goals, ranging from environmental cleanup, Brownfields and economic development, and children’s health, to community education and capacity building. To date, these demonstration projects have leveraged more than \$12 million in public/private resources.

The Agency supports state and Tribal environmental justice programs and provides outreach and technical assistance to states, local governments, and stakeholders on environmental justice issues. In order to be able to respond to an allegation of environmental injustice, it is essential to identify the “affected geographic areas.” In 2001, the Environmental Justice Geographical Information System Assessment Tool was developed for the Internet to provide all stakeholders with information about all geographic areas in the 48 contiguous states.

The Environmental Justice Tool reflects environmental data available from the agency's data warehouse and demographic data provided by the U.S. Census Bureau. Links are provided to the Department of Health and Human Services' health-related database.

The Agency will also expand and refine its environmental justice training program. In FY 2002, a Fundamentals Workshop on Environmental Justice was developed. In FY 2003, a module on the issuance of permits under RCRA, CWA, and CAA was added to the course. EPA will provide 25 training sessions to over 750 individuals in FY 2005.

### ***Geographic Program: Other***

Many cities, towns and neighborhoods continue to express concerns about their exposure to toxic pollutants from multiple sources. While the media-specific authority and the national scope of our programs have significantly reduced the overall exposure to toxic pollutants across the country, there is still more to be done to reduce potential risks at the local level in communities. Community Action for a Renewed Environment (CARE) is a multi-media effort designed to reduce the burden of toxic pollutants in communities. The initiative will support the development and implementation of community-based toxics reduction projects, similar to those underway in Cleveland, St. Louis, Ponca City and South Phoenix. These projects are intended to demonstrate that community-based approaches can be an effective way of addressing diffuse sources of toxic pollutants and cumulative risk by addressing issues comprehensively and by targeting solutions to the specific characteristics and needs of the community. This initiative will encourage and support communities' efforts to focus resources on the greatest risks and build the consensus needed to mobilize local resources to reduce exposures to toxic pollutants. This initiative will build on the wide range of current Agency efforts designed to address community concerns such as Diesel Retrofits, Brownfields, National Estuary Program, Design for Environment, Environmental Justice Revitalization Projects, Tools for Schools, and RGI, improving their effectiveness by working to integrate them to better meet the needs of communities.

Performance will be measured and reported by communities and regions. EPA will collect actions (such as diesel engines retrofitted) and convert them to environmental outcome measures (tons NOx, PM, etc.) wherever possible. Since the community will select the risk-reduction projects, results will vary from community to community. The central team will work with programs to develop new conversion metrics or improve existing ones, as necessary. This program is expected to result in measurable results in the reduction of exposures to toxic pollutants including toxic chemicals, lead, pesticides, particulates as well as reduced exposure to asthma triggers. Expected results also include increased acres of wetlands restored and miles of riparian forest buffer restored and preserved, reductions in exposures resulting from diet and subsistence living practices will also be measured. This initiative will help EPA achieve its Strategic Goals of Clean Air, Clean and Safe Water, Protecting and Restoring the Land, and Healthy Communities and Ecosystems

### ***Infrastructure Assistance: Brownfields Projects***

The Brownfields program coordinates a Federal, state, Tribal, and local government approach to assist in addressing environmental site assessment and cleanup. In FY 2005, the Agency will provide a total of \$120,500,000 for assessment, Revolving Loan Fund (RLF),



cleanup, job training, and petroleum grants as well as financial assistance to localities, states, Tribes, and non-profit organizations for research, training, and technical assistance.

In FY 2005 the Brownfields program will provide \$29,000,000 in funding and technical support for 126 assessments. These assessments provide states (including U.S. territories), political subdivisions (including cities, towns, and counties), and federally- recognized Tribes with necessary tools, information, and strategies for promoting a unified approach to environmental site assessment, characterization, and redevelopment.

The Agency provides funding for site assessment grants of up to \$200,000 each. By the end of FY 2004, EPA will cumulatively award over 640 two year assessment grants to communities to assist them in assessing contamination at Brownfields sites. These grants include existing assessment, greenspace assessment, and showcase assessment-related activities. More than 4,300 properties have had environmental assessments completed under the assessment program since program inception. EPA designed this assistance to enhance state, local and Tribal governments' capacity to assess and clean up properties under state and Federal environmental authorities, and facilitate the redevelopment and reuse of the properties. To date, grants have leveraged over 25,000 cleanup, construction and redevelopment jobs.

In addition, the Agency and its Federal partners will continue to support the existing 28 showcase communities which serve as models to demonstrate the benefits of interagency cooperative efforts in addressing environmental and economic issues related to Brownfields. The showcase communities capitalize on a multi-agency partnership designed to provide a wide range of support depending on the particular needs of each community. The Agency will continue to provide technology support to localities, states and Tribes to ensure that the most efficient and effective technologies are used for Brownfields site assessment, cleanup, and monitoring.

Where appropriate, the Agency provides funding for targeted assessments in communities that are not successful in competing for an assessment grant. Site assessments at non-grant Brownfields sites are performed under existing EPA contracts. This activity enjoys wide support from cities and other local communities. This funding provides preliminary assessments and site investigations using standard methodologies established by, for example, the American Society for Testing and Materials.

To further enhance a community's capacity to respond to Brownfields redevelopment, the Agency will also provide \$41,500,000 in funding to capitalize RLF and cleanup grants for 70 communities. All communities with Brownfields properties are eligible to apply. The Agency will award cooperative agreements to capitalize RLF grants of up to \$1,000,000 each. EPA offers grants to governmental entities which may provide subgrants to nonprofit or other governmental entities. This funding enables eligible entities to develop cleanup strategies, make loans to prospective purchasers to clean up properties, and encourages communities to leverage other funds into their RLF pools and cleanup grants. The Agency also provides direct cleanup grants of up to \$200,000 per site to communities and non-profits.

The Brownfields law (SBLRBRA) authorized the cleanup of petroleum sites. EPA will use approximately \$30,300,000 for the assessment and cleanup of abandoned underground storage tanks (USTs) and other petroleum contamination found on Brownfields properties. This

funding will clean up a portion of the estimated 200,000 abandoned petroleum tanks found at sites. With these funds, EPA will support assessment and cleanup of petroleum contamination in approximately 60 Brownfields communities. In FY 2003, EPA funded 50 grants which targeted clean up of petroleum contamination.

In addition, in FY 2005, the Agency will award Brownfields job training and development grants at up to \$200,000 over two years to help residents of Brownfields communities take advantage of new jobs leveraged by the assessment and cleanup of Brownfields. To augment the communities' capacities to clean up Brownfields sites, EPA will provide \$2,500,000 to fund 10 new job training grants for community residents, and will provide \$3,000,000 to the National Institute of Environmental Health Sciences (NIEHS) to supplement its minority worker training programs that focus on Brownfields workforce development activities. This will result in a cumulative total of 86 job-training grants, resulting in the training of almost 2,000 participants since 1998 and an annual average of 65 percent job placement.

By the end of FY 2005, the Brownfields assessment, RLF, and cleanup grants should leverage over \$7,500,000,000 in public and private investment, and leverage 33,000 jobs in cleanup, construction, and redevelopment, with 6,800 properties assessed.

The Agency will also continue to provide funding for training, research and technical assistance to localities, states, Tribes and nonprofit organizations to ensure that the most efficient and effective technologies are used for Brownfields site assessment, cleanup, and monitoring. In addition, EPA will continue to explore connections between RCRA low-priority corrective action efforts and cleanup of Brownfields properties.

### ***Infrastructure Assistance: Mexico Border***

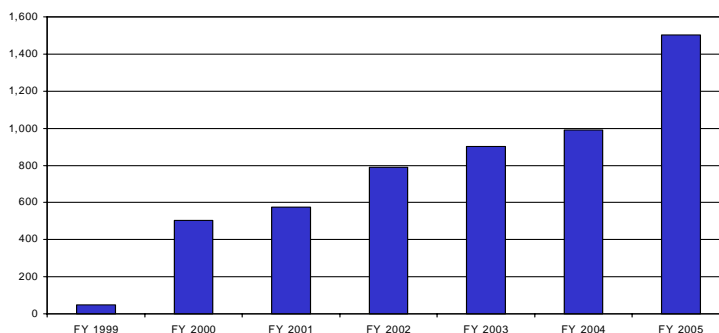
EPA is working along the Mexican Border to reduce transboundary threats to human and ecosystem health in North America. Border communities face unique environmental and coordination challenges. The U.S.-Mexico Border 2012 Program, a joint effort between the U.S. and Mexican governments, will work with the 10 border-states and local communities to improve the region's environmental health. To help bridge the coordination issues, four regional workgroups and Policy Forums will collaborate with local communities to set priorities and plan and implement projects. These groups will also assist in establishing objectives, defining indicators, and measuring progress.

The US and Mexico Governments will work to improve water quality along the border through a range of pollution control sanitation projects, with the goal of restoring the quality of at least half of the currently impaired significant shared and transboundary surface waters by the year 2012. For example, EPA is working with Mexican officials to develop baseline information concerning the number of homes lacking access to basic sanitation and wastewater treatment systems, in support of the Border 2012 goal of increasing by 25 percent the number of homes with access to drinking water and sewage treatment systems (baseline of 1999).

One focus of Border 2012 will be improved water quality in the region. Because of inadequate drinking water and sewage treatment, border residents suffer disproportionately from hepatitis A and other water-borne diseases. By increasing the number of connections to potable water systems, EPA and its partners will reduce health risks to residents who may currently lack

access to safe drinking water. Similarly, by increasing the number of homes with access to basic sanitation, EPA and its partners will reduce the discharge of untreated domestic wastewater into surface and ground water. Our planned assessment of shared and transboundary surface waters will facilitate the collection, management, and exchange of environmental data essential for effective water management.

## U.S./Mexico Border: Cumulative Number of People Connected to Water and Wastewater Systems



Source: Border Environment Cooperation  
Commission: Certification Documents

### ***Regulatory Innovation***

EPA’s community-based approach provides integrated assessment tools and information for environmental protection in partnership with local, state, and Tribal governments. EPA’s Regions also provide direct assistance to communities to assist them in implementing local environmental management efforts and in building capacity for local problem solving. In FY 2005, EPA will continue to support over 150 demonstration projects assisting local community environmental planning and management. These projects strengthen local and intergovernmental partnerships to address risks to human health and ecosystems that provide goods and services to our communities.<sup>67</sup> Specifically, EPA will provide assistance to communities and states to help them identify the integrated set of local environmental issues and develop strategies to address interconnected issues with appropriate regulatory and non-regulatory tools. EPA will also provide tools and information to build better stakeholder involvement and assist communities in conducting assessments of environmental issues. EPA will assist local communities in identifying

*Smart growth* is development that serves the economy, community, and the environment. It provides a framework for communities to make informed decisions about how and where they grow. Smart growth makes it possible for communities to grow in ways that support economic development and jobs; create strong neighborhoods with a range of housing, commercial, and transportation options; and achieve healthy communities that provide families with a clean environment.

<sup>67</sup> [www.epa.gov/smartgrowth/](http://www.epa.gov/smartgrowth/)

measures of performance to enlighten local decisions and assess the value of various models of community-based efforts. EPA will also conduct evaluations of existing projects to assess and fine-tune its own approaches and to derive direction for future demonstrations.

The Agency will more effectively integrate and manage EPA's resources and efforts that are currently available for promoting environmental quality at the community and state level. The Agency will focus on improving environmental quality by: (1) removing barriers and creating incentives for environmentally beneficial development; (2) developing tools and technical assistance (e.g., the Smart Growth Index); (3) leveraging EPA's resources to provide and disseminate information (e.g., through web sites and publications); (4) forming multi-disciplinary, multi-lateral partnerships among public and private sector stakeholders; and (5) identifying and conducting research related to environmental quality impacts associated with development patterns and practices.

### ***U.S.-Mexico Border***

Communities along the 2,000 mile U.S.-Mexico border are experiencing rapid economic and population growth, much of it driven by increased trade between the countries, as well as environmental problems. The border population is now at 11.8 million and is expected to increase by 7.6 million by 2020<sup>68</sup>. The development of new environmental infrastructure has not kept pace with this growth and as a result the area is experiencing water scarcity, serious gastrointestinal and respiratory illness, and hazardous and non-hazardous waste disposal problems<sup>69</sup>.

The U.S.-Mexico Border Program will protect public health and the environment in the border region by increasing the number of people with adequate water and wastewater sanitation systems by financing water infrastructure improvements and educating the communities along the Rio Grande about drinking water and public health issues. The Program will minimize risks from pesticides by training farmers on pesticide risks and safe handling. It will increase the number of Mexican corporations with implemented pollution prevention controls by expanding hazardous waste management and pollution prevention practices. The Program will increase the number of sister-cities with joint contingency plans by improving chemical safety and emergency preparedness in the border region.



<sup>68</sup> U.S. EPA and Mexico Secretariat for the Environment and Natural Resources. "Border 2012: U.S.-Mexico Environmental Program." EPA 160-R-03-001 Available on the Internet: [http://www.epa.gov/usmexicoborder/pdf/2012\\_english.pdf](http://www.epa.gov/usmexicoborder/pdf/2012_english.pdf). April, 2003.

<sup>69</sup> U.S. EPA and Mexico Secretariat for the Environment and Natural Resources. "Border 2012: U.S.-Mexico Environmental Program." EPA 160-R-03-001 Available on the Internet: [http://www.epa.gov/usmexicoborder/pdf/2012\\_english.pdf](http://www.epa.gov/usmexicoborder/pdf/2012_english.pdf). April, 2003.

The U.S.-Mexico Border 2012 Program, a joint effort between the U.S. and Mexican governments, will work with the 10 border states and with local communities to improve the regions environmental health. In FY 2003, EPA, in close cooperation with the SEMARNAT (EPA's Mexican counterpart), other Mexican agencies, the U.S. border states, U.S. Indian Tribal Nations and U.S. and Mexican NGOs and academic institutions, developed a new program for the border, Border 2012: U.S.-Mexican Environment Program<sup>70</sup>, that will focus limited resources in areas which can most directly lead to improvements in public health and environmental conditions in this area. The Border 2012 Program transfers to the states and local communities the responsibility to set priorities and manage program implementation based on explicit environment and public health goals and objectives with measurable outcomes.

In addressing overall transboundary threats to human and ecosystem health along the U.S.-Mexico border region, the Border 2012 Program will focus on: 1) protecting human health; 2) improving air quality through monitoring and control strategies; 3) funding wastewater and drinking water infrastructure investments in under-served communities; 4) managing chemical accidents through completing joint chemical accident contingency plans; 5) supporting pollution prevention programs that will, over the long term, reduce the adverse health and environmental effects of pollutants; 6) reducing and effectively managing hazardous and solid wastes through using tracking mechanisms; 7) strengthening bi-national cooperation between institutions responsible for enforcing their respective country's environmental laws; and 8) strengthening coordination of pesticide activities linking the work on regulatory harmonization with field implementation projects to protect field workers and assure safe food supplies.<sup>71</sup>



US EPA. Picture of open sewage canal and flooded roadway in a US/Mexico border community

One focus of Border 2012 will be improved water quality in the region. Because of inadequate water and sewage treatment, border residents suffer disproportionately from hepatitis A and other water-borne diseases. By increasing the number of connections to potable water systems, EPA and its partners will reduce health risks to residents who may currently lack access to safe drinking water. Similarly, by increasing the number of homes with access to basic sanitation, EPA and its partners will reduce the discharge of untreated domestic wastewater into surface and ground water. Our planned



US EPA. Picture of the effluent disposal channel from Zaragosa wastewater treatment plant in Mexicali, Mexico.

<sup>70</sup> U.S. EPA and Mexico Secretariat for the Environment and Natural Resources. "Border 2012: U.S.-Mexico Environmental Program." EPA 160-R-03-001 Available on the Internet: [http://www.epa.gov/usmexicoborder/pdf/2012\\_english.pdf](http://www.epa.gov/usmexicoborder/pdf/2012_english.pdf). April, 2003.

<sup>71</sup> U.S. EPA and Mexico Secretariat for the Environment and Natural Resources. "Border 2012: U.S.-Mexico Environmental Program." EPA 160-R-03-001 Available on the Internet: [http://www.epa.gov/usmexicoborder/pdf/2012\\_english.pdf](http://www.epa.gov/usmexicoborder/pdf/2012_english.pdf). April, 2003.

assessment of shared and transboundary surface waters will facilitate the collection, management, and exchange of environmental data essential for effective water management. By 2005, the Border 2012 Program will promote the assessment of 10 percent of the existing water systems in the border cities to identify opportunities for improvement in overall water system efficiencies.

In the effort to help safeguard the health of border residents by protecting and improving border air quality, the Border 2012 will continue the effort in FY 2005 to define baseline and alternative scenarios for emissions reductions along the border and their impacts on air quality and human exposure. Based on results obtained from defining baselines and scenarios, the program can define specific emission reductions strategies and air quality and exposure objectives to be achieved by 2012.

As part of the goal to reduce land contamination, the Border 2012 will continue the effort in FY 2005 to identify needs and develop an action plan to improve institutional and infrastructure capacity for waste management and pollution prevention as they pertain to hazardous and solid waste and toxic substances along the U.S.-Mexico border. The plan will be implemented in FY 2005 and concluded by 2012. Waste “management capacity” (both institutional and in terms of infrastructure) means having the techniques, organizations, expertise, and technology to effectively handle and dispose of waste. Where a lack of capacity is identified, the Border 2012 program will work to develop the needed capacity to ensure the appropriate management of waste. In 2005, EPA will fund removal of surface drums, sacks, and some soil for proper disposal to a hazardous waste facility in the U.S. This site has abandoned leaking drums and sacks with toxic concentrations of lead, as well as some surface level soil hot spots with extremely high lead concentrations. This action would be much like a small targeted Superfund removal that stabilizes a site before a more permanent remedy. The project will demonstrate swift, significant results to the Mexican community downhill from the site.

Also in FY 2005, the Border 2012 will continue the effort to evaluate the hazardous waste tracking systems in the United States and Mexico. Currently, both the United States and Mexico have their own, separate computer systems for tracking the movement of hazardous waste across the border.

An EPA funded project will develop Fire Prevention Plans in conjunction with tire pile operators and pre-incident plans in conjunction with emergency responders in an effort to prevent waste tire pile fires on the border through an assessment of Mexican tire pile sites. EPA will also continue the effort to extend current efforts in bi-national environmental health training for 100 health care providers each for pesticides and water.

The Border 2012 will continue the effort to develop a bi-national policy of clean up and restoration resulting in the productive use of abandoned sites contaminated with hazardous waste or materials, along the length of the border, in accordance with the laws of each country. By 2007, this policy is targeted to apply at least once in each of the four geographic regions. There are a number of contaminated sites in the border region that are of concern to both countries. Mexico and the United States will develop a policy on having sites cleaned up and restored to productive use. The policy also will identify priority sites in the border area.

Finally, as part of an effort to reduce exposure to chemicals as a result of accidental chemical releases and/or acts of terrorism, the Border 2012 will continue the effort in FY 2005 to establish joint contingency plans for all 14 pairs of sister cities. By 2008, these plans will be in place and operating (including exercises), with the establishment of bi-national committees for chemical emergency prevention (or similar border forums).

### ***Children and Other Sensitive Populations***

EPA will also continue its commitment to protect children's health as a member of the President's Task Force on Environmental Health and Safety Risks to Children.<sup>72</sup> The Agency will direct resources toward the programs that reduce risks to children from a range of environmental hazards. In 2005, the Agency will focus on research and analyses to provide scientific and economic information needed to address the heightened risks faced by children from environmental contaminants. The Agency will continue to work with HHS to decrease the frequency and severity of asthma attacks in children through reduction and avoidance of key asthma triggers, including environmental tobacco smoke, prevalent indoor allergens and ambient air pollution. The Agency will continue efforts with HUD to reduce children's exposure to lead, particularly in low income minority neighborhoods where children living in older housing are much more likely to be exposed to lead. The Agency will also continue to work with the states and other partners to identify and address environment issues in schools that may affect children's health. EPA will continue to build partnerships and work with other Federal agencies, states, health care providers, and international organizations to incorporate children's environmental health into their programs and activities.

Additionally, the Office of Children's Health Protection and the Office of Research and Development will lead an Agency effort to reduce exposure of older Americans to environmental hazards. Working with stakeholders, the Agency will begin to implement activities identified in a national agenda on the environmental health of older adults, being developed in 2004. The national agenda is expected to: 1) prioritize and study environmental health threats to older persons; 2) examine the effect that a rapidly growing aging population might have on our environment; and 3) encourage older persons to engage in civic activities in their communities to reduce hazards and protect the environment.

### ***Regional Geographic Initiative***

The Regional Geographic Initiative (RGI) is one of the most effective tools that the Regions have available to address complex and cross-jurisdictional problems using geographic-based, multi-media, holistic approaches. The Regions use RGI to achieve the balance between flexibility in responding to state and local needs and national priorities. The problems addressed by RGI often showcase innovative solutions to risks to human health and ecosystems. As a result, RGI enables EPA Regional offices to partner with states, local governments, communities and the private sector on problems identified via strategic planning processes as high priority in the Regions, based on national and regional criteria. Many RGI projects are critical components of larger Agency programs and the Regions use RGI to further such Presidential, Administrator, and Agency initiatives as children's health, watersheds, clean air, pollution prevention, and environmental stewardship.

---

<sup>72</sup> U.S. EPA, Office of the Administrator. "Environmental Health Threats to Children", EPA 175-F-96-001, September 1996.

Each year, RGI funds a myriad of projects that solve environmental and public health problems that:

- address disproportionate levels of environmental and public health risks (i.e. asthma, lead levels, threats to air and water quality);
- support collaboration with communities and many different partners (watershed planning, demonstration projects, and air monitoring);
- focus on environmental outcomes, rather than activity measures; and,
- leverage additional funds from states, localities, non-profit, private, and other sources that contribute to environmental improvement.

Working with communities to find cost effective solutions that work for them, ensuring involvement of all stakeholders in the process, and leveraging resources from federal, state and private sectors are all critical components of RGI. The RGI approach has been very successful in resolving multi-media environmental and health issues.<sup>73</sup>

#### **FY 2005 CHANGE FROM FY 2004**

##### **EPM**

- (+\$2,000,000): Community Action for a Renewed Environment (CARE) will support the development and implementation of multi-media community-based toxics reduction projects, similar to those underway in Cleveland, St. Louis and South Phoenix. It will fill the current gap in our national programs, which provide a broad level of basic health and environmental protection but are not always sufficient to meet the needs of all communities, especially those which are over-burdened by toxic pollutants. This initiative will reduce those risks through cost-effective, tailored and immediate actions. In this initiative grants will be awarded to provide funding for communities to organize and assess the risks in their community and to take action to reduce those risks. The initiative will support regions by providing multi-media risk reduction and risk assessment tools, models to assist communities in identifying, prioritizing and reducing risks. It will also conduct training and hold conferences, as needed, to educate community members and share lessons learned. Finally, the team will collect and aggregate results provided by the specific projects and conduct program evaluations to assess the resulting benefits and lessons learned. The regions will work directly with the communities to provide needed support and information. This initiative will work in tandem with the Clean School Bus Diesel Retrofit Grant Program in Goal 1. Retrofitting school buses will allow areas to achieve reductions in toxics emissions that affect children.
- (+\$64,800, +0.5 FTE): Increased resources will be used to help manage the Agency's Environmental Justice Small Grants program.
- (-\$700,000, -0 FTE): Resources redirected to the International Capacity Building Program/Project to emphasize significant capacity issues along the U.S.-Mexico border.

---

<sup>73</sup> U.S. EPA, Office of Regional Operations, (202) 564-3100



- There are additional increases for payroll, cost-of-living, and enrichment for existing FTE.

## **ANNUAL PERFORMANCE GOALS AND MEASURES**

### **GOAL: HEALTHY COMMUNITIES AND ECOSYSTEMS**

#### **OBJECTIVE: COMMUNITY HEALTH**

##### **Annual Performance Goals and Measures**

###### **U.S. - Mexico Border Water/Wastewater Infrastructure**

- In 2005 In the US-Mexico Border Region, sustain and restore community health, and preserve the ecological systems that support them
- In 2004 Increase the number of residents in the Mexico border area who are protected from health risks, beach pollution and damaged ecosystems from nonexistent and failing water and wastewater treatment infrastructure by providing improved water and wastewater service.
- In 2003 Increase the number of residents in the Mexico border area who are protected from health risks, beach pollution and damaged ecosystems from nonexistent and failing water and wastewater treatment infrastructure by providing improved water and wastewater service.

Performance Measures:	FY 2003 Enacted	FY 2004 Pres. Bud.	FY 2005 Request 1.5 Million	People
People in the Mexico border area protected from health risks because of adequate water and wastewater sanitation systems funded through the Border Environmental Infrastructure Fund.				
Number of additional people in Mexico border area protected from health risks, because of adequate water & wastewater sanitation systems funded through border environmental infrastructure funding.	900,000	990,000		People

Baseline: The US-Mexico border region extends more than 3,100 kilometers (2,000 miles) from the Gulf of Mexico to the Pacific Ocean, and 62.5 miles on each side of the international border. More than 11.8 million people reside along the border and this figure is expected to increase to 19.4 million by 2020. Ninety percent of the population reside in the 14 impaired, interdependent sister cities. Rapid population growth in urban areas has resulted in unplanned development, greater demand for land and energy, increased traffic congestion, increased waste generation, overburdened or unavailable waste treatment and disposal facilities, and more frequent chemical emergencies. Rural areas suffer from exposure to airborne dust, pesticide use, and inadequate water supply and treatment facilities. EPA, other US Federal agencies, and the Government of Mexico have partnered to address these environmental problems.

###### **World Trade Organization - Regulatory System**

- In 2005 Assist trade partner countries in completing environmental reviews

Performance Measures:	FY 2003 Enacted	FY 2004 Pres. Bud.	FY 2005 Request 3	Countries
Number of environmental reviews initiated by FTAA countries following the enactment of the 2002 Trade Promotion Act (TPA).				

Baseline: As of the end of FY 2003, two environmental reviews (Chile and Singapore) have been initiated since the enactment of the 2002 Trade Promotion Act.

###### **Revitalize Properties**

- In 2005 Leverage jobs by assessing, promoting the cleanup and reuse of brownfields properties.
- In 2004 Leverage jobs through revitalization efforts.
- In 2004 Leverage or generate funds through revitalization efforts.
- In 2004 Make Brownfields property acres available for reuse or continued use.

In 2003 Leverage jobs through revitalization efforts.

In 2003 Leverage or generate \$0.9 B through revitalization efforts.

Performance Measures:	FY 2003 Enacted	FY 2004 Pres. Bud.	FY 2005 Request	
Number of Brownfields properties assessed.	472 (qtr 3)	1,000	1,000	assessments
Number of Brownfields cleanup grants awarded.		25	25	grants
Number of properties cleaned up using Brownfields funding.		no target	60	properties
Estimated number of Brownfield property acres available for reuse or continued use.		no target	no target	acres
Number of jobs leveraged from Brownfields activities.	1,202 (qtr 3)	2,000	5,000	jobs
Number of Brownfields job training participants trained.		200	200	participants
Percentage of Brownfields job training trainees placed.	62% (qtr 3)	65%	65%	trainees placed
Amount of cleanup and redevelopment funds leveraged at Brownfields sites.	\$0.3B (qtr 3)	\$0.9B	\$1.0B	funds
Number of Tribes supported by Brownfields cooperative agreements.			no target	Tribes

Baseline: By the end of FY 2002, the Brownfields program had leveraged 19,646 jobs, provided job training to 913 individuals, placed an average of 65% of job training participants, and leveraged a total of \$6.7 billion. Data reported for FY 2002 reflect accomplishments up to the 3rd quarter of FY 2002.

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

### **FY 2005 Performance Measure:**

- Number of Brownfields properties assessed.
- Number of jobs leveraged from Brownfields activities.
- Number of properties cleaned up using Brownfields funding.
- Percentage of Brownfields job training trainees placed.
- Amount of cleanup and redevelopment funds leveraged at Brownfields sites.

**Performance Database:** The Brownfields Management System (BMS) contains the performance information identified in the above measures.

Key fields related to performance measures include:

AP 5 - Number of Properties with Assessment Completed with Pilot Funding

AP 11 - Number of Cleanup/Construction Jobs Leveraged

AP 12 - Number of Cleanup Dollars Leveraged

AP 13 - Number of Redevelopment Jobs Leveraged

AP 14 - Number of Redevelopment/Construction Dollars Leveraged

JT 2 - Number of Participants Completing Training

JT 3 - Number of Participants Obtaining Employment

RLF - Number of Properties with cleanup activities completed using Brownfields Cleanup Revolving Loan Fund funds.

**Data Source:** Data are extracted from quarterly reports prepared by Cooperative Agreement Award Recipients

**Methods, Assumptions and Sustainability:** Cooperative Agreement Award Recipients submit reports quarterly on project progress. Data on performance measures are extracted from quarterly reports by an EPA contractor. Afterwards, data are forwarded to Regional Pilot managers for review and finalization.

“Number of jobs leveraged from Brownfields activities” is the aggregate of the “Number of redevelopment jobs leveraged” and the “Number of cleanup/construction jobs leveraged.” “Amount of cleanup and redevelopment funds leveraged at Brownfields sites” is the aggregate of “Number of Cleanup Dollars Leveraged” and the “Number of Redevelopment/Construction Dollars Leveraged.” “Percentage of Brownfields job training trainees placed” based on the “Number of Participants Completing Training” and the “Number of Participants Obtaining Employment.” “Number of properties cleaned up using Brownfields funding” is the aggregate of “Number of Properties with cleanup activities completed using BCRLF funds” and the number of properties cleaned up using cleanup grant funding (to be included in amended database. See “New and Improved Data or Systems”).

**QA/QC Procedures:** Data reported by cooperative award agreement recipients are reviewed by EPA Regional pilot managers for accuracy and to ensure appropriate interpretation of key measure definitions. Reports are produced monthly with detailed data trends analysis.

**Data Quality Reviews:** No external reviews.

**Data Limitations:** All data provided voluntarily.

**Error Estimate:** NA

**New/Improved Data or Systems:** The Brownfields Management System (BMS) has been migrated to an oracle platform and is currently being modified to include all reporting elements required in grantee terms and conditions. Key field definitions will be updated.

**References:** NA

**FY 2005 Performance Measure: People in the Mexico border area connected to potable water and wastewater collection and treatment systems (cumulative).**

**Performance Database:** No formal EPA database. Performance is tracked and reported quarterly by Border Environment Cooperation Commission (BECC) and North American Development Bank (NADBank). Data field is A population –served by potable water and wastewater collection and treatment systems.

**Data Source:** 1) U.S. population figures from the 2000 U.S. Census [**Reference A, below**]; 2) Data on U.S. and Mexican populations served by "certified" water/wastewater treatment improvements from the BECC; 3) Data on projects funded from the NADBank.

**Methods, Assumptions and Suitability:** Summation of population from BECC and NADBank. U.S. Census data are assumed to be correct and suitable.

**QA/QC Procedures:** EPA Headquarters is responsible for evaluation of reports from BECC and NADBank on drinking water and wastewater sanitation projects. Regional representatives attend meetings of the certifying and financing entities for border projects (BECC and NADBank) and conduct site visits of projects underway to ensure the accuracy of information reported. **[Reference B]**

**Data Quality Review:** Regional representatives attend meetings of the certifying and financing entities for border projects (BECC and NADBank) and conduct site visits of projects underway to ensure the accuracy of information reported.

**Data Limitations:** None

**Error Estimate:** Same as census data.

**New/Improved Data or Systems:** None.

**References:**

A. U.S. Department of Commerce, Bureau of the Census, (Washington, DC: U.S. Department of Commerce, 1990). *Instituto Nacional de Estadística, Geografía y Informática, Aguascalientes, Total Population by State (1990).*

B. Border Environment Cooperation Commission (BECC), Cd Juarez, Chih, and North American Development Bank (NADBank), (San Antonio, TX, 2002).

**FY 2005 External Performance Measure: Assist trade partner countries in completing environmental reviews.**

**Performance Database:** None- Manual Collection

**Data Source:** Project / Trade Agreement Specific

**QA/QC Procedures:** Verification does not involve any pollutant database analysis, but will require objective assessment of: (1) tasks completed, (2) compliance with new regulation, and (3) progress toward project goals and objectives.

Validating measurements under international programs presents several challenges. Technical assistance projects, for instance, typically target developing countries, which often do not have sound data collection and analysis systems in place. Non-technical projects, such as assistance in regulatory reform, frequently must rely on more subjective measures of change, such as the opinions of project staff or reviews by third-party organizations, including other U.S. government organizations, in judging the long-term efficacy of the assistance provided.

EPA works with its trading partners on capacity building projects, which establish the framework and tools to ensure increased trade does not degrade the environment and harm human health. Projects will help prevent pollution at the source, and will be tailored to partner-country needs and be built on past US assistance. Tracking development and implementation of these projects presents few challenges because EPA project staff maintains close contact with their counterparts and any changes become part of a public record. Assessing the effectiveness of these projects or

the inclusion of environmental provisions in trade agreements is more subjective. Aside from feedback from Agency project staff, EPA relies, in part, on feedback from its trading partners in the target countries and regions and from non-governmental organizations (NGOs) and other third parties. Because EPA works to establish long-term relationships with its trading partners, the Agency is often able to assess environmental improvements in these countries and regions for a number of years following implementation of the trade agreement.

### **EFFICIENCY MEASURES/MEASUREMENT DEVELOPMENT PLANS**

The Agency will work to develop and support the measurement of surface water quality along the Mexican Border. In the 2003 Strategic Plan, EPA commits by 2012 to assessing significant shared and transboundary surface waters and to achieving a majority of water quality standards currently being exceeded in those waters. In FY 2005, a work group will be established with Mexico and a work plan developed to measure annual progress toward this target. The workplan will cover both the achievement of the target and its measurement. As a binational plan, success will depend equally on U.S. and Mexican government resources and actions. In addition, the Mexican Border program will be proposing an efficiency measure as part of the FY 06 PART process.

### **COORDINATION WITH OTHER AGENCIES**

In November 2002, the EPA Administrator announced the Brownfields Federal Partnership Action Agenda. This involves 23 Federal agencies contributing resources and technical assistance to Brownfields redevelopment. Federal resources include: redevelopment funds from the Department of Housing and Urban Development and the Economic Development Agency; planning funds from the Economic Development Agency and job training efforts from the Department of Labor and the National Institute of Environmental Health Sciences.

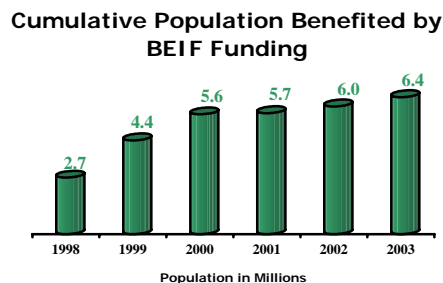
EPA and these other Federal agencies will continue to provide active support for Brownfields activities across the country in FY 2005. To augment the success of the Brownfields Federal Partnership and its efforts to clean up and redevelop Brownfields properties, the Agency and its Federal partners continue to revise and enter into new Memoranda-of-Understanding.

The Brownfields program also relies on partnership building with local government, state, and non-government groups to leverage Federal funding with private sector funding. As part of the Brownfields initiative, EPA will continue to provide outreach, curriculum development, job training, and technical assistance to community residents through cooperative agreements to community-based organizations, community colleges, universities, and private sector non-profit groups. The Agency also works with cities, states, federally recognized Indian Tribes, community representatives, and other stakeholders to implement the many commitments. Successful Brownfields redevelopment is proof that economic development and environmental protection go hand in hand.

EPA's environmental mandate and expertise make it uniquely qualified to represent the nation's environmental interests abroad. While the Department of State (DOS) is responsible for the conduct of overall U.S. foreign policy, implementation of particular programs, projects, and agreements is often the responsibility of other agencies with specific technical expertise and resources. Relations between EPA and DOS cut across several offices and/or bureaus in both organizations.

EPA works extensively with the Office of the U.S. Trade Representative (USTR), particularly its Office of Environmental and Natural Resources, to ensure that U.S. trade and environmental policies are mutually supportive. For example, through the Agency's participation in the negotiation of both the North American Free Trade Agreement and the World Trade Organization Agreements, EPA has worked with USTR to ensure that U.S. obligations under international trade agreements do not hamper the ability of Federal and state governments to maintain high levels of domestic environmental protection. The two agencies also work together to ensure that new obligations are consistent with U.S. law and EPA's rules, regulations, and programs. In addition to the work with USTR, EPA also cooperates with many other Federal agencies in the development and execution of US trade policy, and in performing environmental reviews of proposed trade agreements. Moreover, EPA works closely with the Department of State and USAID in developing and implementing environmental cooperation agreements associated with each new FTA, and the associated environmental capacity building projects.

EPA and the Department of Commerce work together closely on a range of different issues, including many science and technology issues. For example, EPA is responsible for implementing activities under the Export Enhancement Act of 1992. The Act mandated EPA participation on the Environmental Trade Working Group of the Trade Promotion Coordinating Committee, an interagency working group chaired by the Secretary of Commerce to coordinate the government's overall environmental trade promotion activities.



The Governments of Mexico and the United States agreed, in November 1993, to assist communities on both sides of the border in coordinating and carrying out environmental infrastructure projects. The agreement between Mexico and the United States furthers the goals of the North American Free Trade Agreement and the North American Agreement on Environmental Cooperation. To this purpose, the governments established two international institutions, the Border Environmental Cooperation Commission (BECC) and the North American Development Bank (NADBank), which manages the Border Environmental Infrastructure Fund (BEIF), to support the financing and construction of much need environmental infrastructure.

The BECC, with headquarters in Ciudad Juarez, Chihuahua, Mexico, assists local communities and other sponsors in developing and implementing environmental infrastructure projects. As of August 31, 2003, EPA has provided \$38.7 million to the BECC project development fund. The BECC also certifies projects as eligible for NADBank financing. The NADBank, with headquarters in San Antonio, Texas, is capitalized in equal shares by the United

States and Mexico. NADBank provides new financing to supplement existing sources of funds and foster the expanded participation of private capital. As of August 31, 2003, EPA has provided \$437.6 million to NADBank through the BEIF which then issues border grants for individual projects on the agency's behalf.

A significant number of residents along the U.S.-Mexico border area are without basic services such as potable water and wastewater treatment and the problem has become progressively worse in the last few decades. Over the last several years, EPA has continued to work with the U.S. and Mexican Sections of the International Boundary and Water Commission to further efforts to improve water and wastewater services to communities within 100 km of the U.S.-Mexico border. Recently, EPA has been involved in efforts to plan, design and construct more than 10 water and wastewater facilities in the border region.

The Administrator co-chairs, along with the Secretary of the Department of Health and Human Services, the President's Task Force on Environmental Health and Safety Risks to Children. About 15 Federal cabinet departments, agencies and White House offices are members of the Task Force.

## **STATUTORY AUTHORITIES**

Annual Appropriations Act

Clean Air Act

Clean Water Act

Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended by the Small Business Liability Relief and Brownfields Revitalization Act (SBLRBRA) (Public Law 107-118).

Computer Security Act

Congressional Review Act

Congressional Review Act

Contract law

CPRKA of 1986

Emergency Planning and Community Right-to-Know Act (EPCRA) section 313 (42 U.S.C. 110001-11050)

Emergency Planning and Community Right-to-Know Act (EPCRA) section 313 (42 U.S.C. 110001-11050)

Enterprise for the Americas Initiative Act (7 U.S.C. 5404)

Environmental Research, Development, and Demonstration Act (ERDDA) of 1981

EPA's Assistance Regulations

EPA's Environmental Statues

Executive Order 12866

Executive Order 12915 - Federal Implementation of the North American Agreement on Environmental Cooperation

Executive Order 12916 - Implementation of the Border Environment Cooperation Commission and the North American Development Bank Plain Language Executive Order

Executive Order 13148, "Greening the Government through Leadership in Environmental Management"

Federal Acquisition Regulations

Federal Advisory Committee Act (FACA) (5 U.S.C. App.)  
Federal Food, Drug and Cosmetic Act (FFDCA)  
Federal Grant and Cooperative Agreement Act  
Federal Insecticide, Fungicide, and Rodenticide Act  
Federal Managers Financial Integrity Act (FMFIA)  
Food Quality Protection Act (FQPA)  
Freedom of Information Act (FOIA) (5 U.S.C. 552)  
Government Management Reform Act (1990)  
Government Paperwork Elimination Act (GPEA)  
National Environmental Education Act  
National Environmental Policy Act  
North American Agreement on Environmental Cooperation  
North American Agreement on Environmental Cooperation  
North American Free Trade Agreement  
Paperwork Reduction Act Amendment of 1995 (44 U.S.C. 3501-3520)  
Pollution Prevention Act (PPA) (42 U.S.C. 13101-13109)  
PPA (42 U.S.C. 13101-13109)  
Privacy Act  
Regulatory Flexibility Act  
Resource Conservation and Recovery Act (RCRA) 8001.  
Safe Drinking Water Act  
Small Business Regulatory Enforcement Fairness Act  
Toxic Substance Control Act section 14 (TSCA) (15 U.S.C. 2601-2692)  
Toxic Substances Control Act  
Trade Act of 2002 (TPA)  
Unfunded Mandates Reform Act  
World Trade Organization Agreements



## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Healthy Communities and Ecosystems

**OBJECTIVE:** Ecosystems

Protect, sustain, and restore the health of natural habitats and ecosystems.

#### Resource Summary (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
<b>Ecosystems</b>	<b>\$171,169.4</b>	<b>\$160,698.1</b>	<b>\$200,844.5</b>	<b>\$40,146.5</b>
Environmental Program & Management	\$142,880.5	\$119,336.0	\$154,173.6	\$34,837.6
Buildings & Facilities	\$325.5	\$386.5	\$422.6	\$36.1
State & Tribal Assistance Grants	\$27,146.2	\$40,000.0	\$45,000.0	\$5,000.0
Inspector General	\$817.2	\$975.6	\$1248.4	\$272.8
Total Workyears	546.0	384.8	390.8	5.9

#### Program Project (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Congressionally Mandated Projects	\$16,157.3	\$0.0	\$0.0	\$0.0
Geographic Program: Other	\$5,731.7	\$4,762.5	\$4,789.7	\$27.2
Regional Geographic Initiatives	\$6,855.9	\$0.0	\$0.0	\$0.0
Categorical Grant: Wetlands Program Development	\$14,206.2	\$20,000.0	\$20,000.0	\$0.0
Categorical Grant: Targeted Watersheds	\$12,940.0	\$20,000.0	\$25,000.0	\$5,000.0
Geographic Program: Chesapeake Bay	\$21,755.2	\$20,777.7	\$20,816.6	\$38.9
Geographic Program: Great Lakes	\$16,810.7	\$18,104.2	\$21,194.8	\$3,090.6
Geographic Program: Gulf of Mexico	\$4,383.0	\$4,431.7	\$4,477.8	\$46.1
Geographic Program: Lake Champlain	\$2,666.6	\$954.8	\$954.8	\$0.0
Geographic Program: Long Island Sound	\$2,225.5	\$477.4	\$477.4	\$0.0
Great Lakes Legacy Act	\$0.0	\$15,000.0	\$45,000.0	\$30,000.0
National Estuary Program / Coastal Waterways	\$22,712.0	\$19,094.2	\$19,229.3	\$135.1
Wetlands	\$17,129.2	\$19,299.9	\$19,752.8	\$452.9
Administrative Projects	\$27,596.1	\$17,795.7	\$19,151.3	\$1,355.7
<b>TOTAL</b>	<b>\$171,169.4</b>	<b>\$160,698.1</b>	<b>\$200,844.5</b>	<b>\$40,146.5</b>

## **FY 2005 REQUEST**

### ***Results to be Achieved under this Objective***

EPA is working to protect, sustain, and restore the health of natural habitats and ecosystems by identifying and evaluating problem areas, developing tools, and improving community capacity to address problems. Special emphasis on these varied place-based ecosystem protection efforts provides the opportunity not only to have necessary heightened Federal involvement in critical watersheds, but also to develop and implement water quality control practices and other ecosystem management tools whose successes can be transferred to other place-based efforts nationwide. Actions in these targeted areas will support the achievement of goals to improve water quality, including improvements to overall aquatic system health in coastal waters.

### ***National Estuary Program***

During the past decade, the U.S. has preserved, restored and/or created hundreds of thousands of acres of habitat nationwide as part of the National Estuary Program (NEP). The program focuses not just on improving water quality in an estuary, but on maintaining the integrity of the whole system -- its chemical, physical, and biological properties, as well as its economic, recreational, and aesthetic values. Some of the mechanisms used to protect habitats include land acquisition, conservation easements, and deed restrictions.

Estuaries are among the most productive ecosystems on earth, providing numerous ecological, economic, cultural, and aesthetic benefits and services. They are also among the most threatened ecosystems, largely as a result of rapidly increasing growth and development along the Nation's coastlines. About half the U.S. population now lives in coastal areas, and coastal counties are growing three times faster than counties elsewhere in the nation. Overuse of resources and poor land use practices have resulted in beach and shellfish bed closings, harmful algal blooms, unproductive fisheries, loss of habitat and wildlife, fish kills, and a host of other human health and natural resource problems.

EPA plans to implement key activities<sup>74</sup> under its flagship coastal watershed protection effort, the NEP, to help address these growing threats to the Nation's estuarine resources. The NEP, which provides inclusive, community-based planning and action at the watershed level, is an important initiative in conserving our estuarine resources.

EPA will facilitate the ecosystem-scale protection and restoration of natural areas by supporting continuing efforts of all 28 NEP estuaries to implement their Comprehensive Conservation and Management Plans (CCMPs) to protect and restore estuarine resources. In addition, the Agency will provide more focused support for several priority needs identified by EPA and the NEP, including problems of invasive species, air deposition of pollutants such as

---

<sup>74</sup> The means and strategies outlined here for achieving Sub-objective 4.3.1 must be viewed in tandem with the means and strategies outlined under Goal 2, Objective 2, Sub-objective 2.2.2, Improve Ocean and Coastal Waters. @ Sub-objective 2.2 contains strategic targets for EPA's vessel discharge, dredged material management, ocean disposal programs, and other ocean and coastal programs, which are integral to the Agency's efforts to facilitating the ecosystem scale protection and restoration of natural areas.

mercury and nitrogen, and nutrient over-enrichment. EPA will support estuaries in developing aquatic nuisance species monitoring protocols and rapid response plans, improving mercury deposition monitoring, and developing and implementing nutrient management strategies.

The health of the Nation's estuarine ecosystems also depends on the maintenance of high-quality habitat. Diminished and degraded habitats are less able to support healthy populations of wildlife and marine organisms and perform the economic, environmental, and aesthetic functions on which coastal populations depend for their livelihood. EPA will facilitate ecosystem-scale protection and restoration by supporting estuary efforts to achieve its habitat restoration and protection goal of 250,000 additional acres by 2008. In FY 2005, EPA and its partners will protect or restore an additional 25,000 acres of habitat.

### ***Wetlands and Wetland Program Development Grants***

Over the years, the United States has lost more than 115 million acres of wetlands to development, agriculture, and other purposes.<sup>75</sup> Today, the Nation still loses an estimated 58,000 acres of wetlands every year, while other wetlands are being degraded by excessive sedimentation, nutrient over-enrichment, pesticides, invasive species, habitat loss and fragmentation.<sup>76</sup>

The Administration has set the stage for a growing commitment to a regulatory program aimed at no net loss of wetlands and to public and private, regulatory and non-regulatory initiatives and partnerships to improve the overall condition of the Nation's wetlands. In December 2003, the Administrator of EPA and the Assistant Secretary of the Army reiterated the Administration's commitment to the goal of "no net loss" of wetlands, reaffirming and bolstering protections for wetlands.

Because the Clean Water Act does not protect all wetlands, achieving the Administration's commitment necessitates stronger state, Tribal and local programs to protect the most vulnerable wetlands. In FY04 states are applying to be certified as eligible for grants based upon comprehensive programs that meet environmental standards. Grant funds will help states and tribes to protect wetlands that were once protected by federal agencies but are no longer because of the Supreme Court's 2001 Decision in *Solid Waste Association of Northern Cook County*.

EPA will work with its state and Tribal partners to develop and implement broad-based and integrated monitoring and assessment programs that improve data for decision-making within the watersheds, address significant stressors, and report on condition. EPA will work to achieve national gains in wetlands acreage by implementing an innovative partner-based wetlands and stream corridor restoration program. The Agency, working with the Corps of Engineers, and other partners, will continue to implement the Administration's Mitigation Action Plan and to build our capacity to measure wetland function and condition, in addition to measuring wetland acreage. EPA's support will help avoid or minimize wetland losses, and

---

<sup>75</sup> Dahl, T.E. 1990. *Wetlands Losses in the United States, 1780s to 1980s*. Washington, DC: U.S. Department of the Interior, U.S. Fish and Wildlife Service. Available online at: <http://www.npwrc.usgs.gov/resource/othrdata/wetloss/wetloss.htm>.

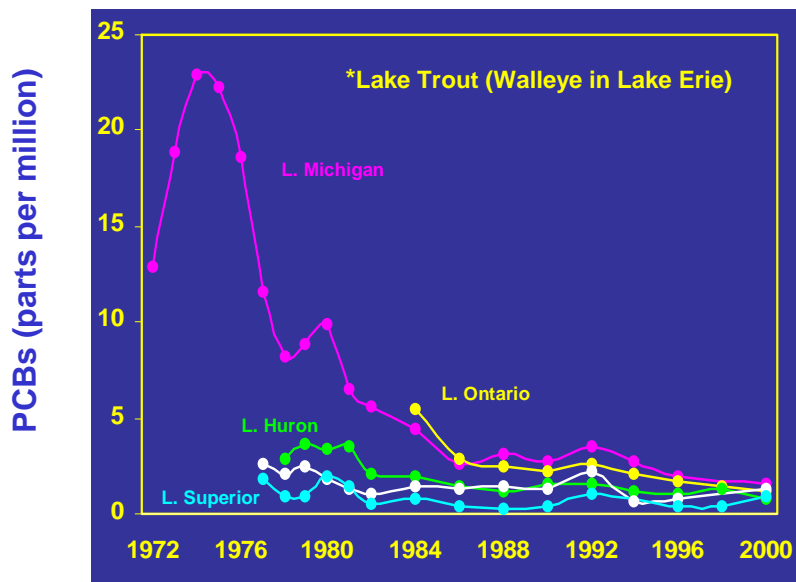
<sup>76</sup> Dahl, T.E. 1990. *Status and Trends of Wetlands in the Conterminous United States, 1986 to 1997*. Washington, DC: U.S. Department of the Interior, U.S. Fish and Wildlife Service. Available online at: <http://wetlands.fws.gov/bha/SandT/SandTReport.html>: Report to Congress on the Status and Trends of Wetlands in the Conterminous United States, 1986 to 1997.

provide for full compensation for unavoidable losses of wetland functions. Wetlands and stream corridor restoration will remain a focus for regaining lost aquatic resources.

### Great Lakes

The Great Lakes are the largest system of surface freshwater on earth, containing 20 percent of the world's surface freshwater and accounting for more than 90 percent of the surface freshwater in the United States. The watershed includes two nations, eight American states, a Canadian province, more than 40 Tribes and is home to more than one-tenth of the U.S. population. To further restore the chemical, physical, and biological integrity of the Great Lakes ecosystem, EPA is implementing Clean Water Act core water protection programs and has launched the Great Lakes Strategy 2002: A Plan for the New Millennium on behalf of the U.S. Policy Committee.<sup>77</sup> The Strategy presents a basin-wide vision for Great Lakes protection and restoration, identifying the major environmental issues in the Great Lakes; establishing common goals for Federal, state, and Tribal agencies; and helping to fulfill U.S. responsibilities under the U.S.-Canada Great Lakes Water Quality Agreement. Objectives include the clean up and de-listing of at least 10 Areas of Concern by 2010, a 25 percent reduction in PCB concentrations in lake trout and walleye (see graph below), and the restoration or enhancement of 100,000 acres of wetlands within the Great Lakes basin. The Strategy also sets goals for the clean up of all Areas of Concern by 2025, and for 90 percent of monitored Great Lakes beaches to be open 95 percent of the season.

### Polychlorinated biphenyls (PCBs) Trends in Great Lakes fish tissue\*



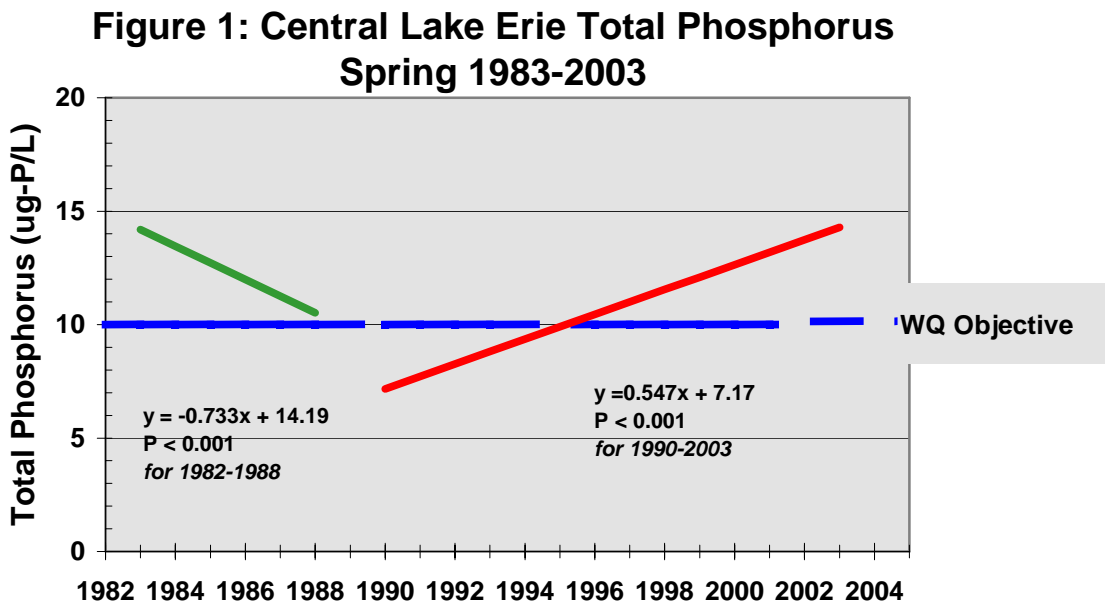
Source: Great Lakes National Program Office annual monitoring program, Great Lakes Environmental Database

The Great Lakes Strategy incorporates the Great Lakes Binational Toxics Strategy, a groundbreaking international toxics reduction effort that targets a common set of persistent, toxic

<sup>77</sup> U.S. Policy Committee for the Great Lakes. April 2002. *A Strategic Plan for the Great Lakes Ecosystem*. Washington, DC. Available online at <http://www.epa.gov/glnpo/gls/glsvideotest.html>.

substances for reduction and elimination (<http://www.epa.gov/glnpo/bns/documents.html>).<sup>78</sup> The Toxics Strategy applies voluntary and regulatory tools focused on pollution prevention to a targeted set of substances including mercury, PCBs, dioxins/furans, and certain canceled pesticides. The Strategy outlines activities for states, industry, Tribes, non-governmental organizations, and other stakeholders.

GLNPO will lead development of management recommendations to address the inexplicably low dissolved-oxygen levels in Lake Erie, which have resulted in an increasing “dead zone.” Despite U.S. and Canadian success in achieving total phosphorus load reductions, phosphorus in the central basin of Lake Erie has increased since the early 1990’s to levels substantially in excess of the Great Lakes Water Quality Agreement Objective of 10ug-P/l (see Figure 1). During 2004, GLNPO will cooperate with Environment Canada on several targeted projects in Lake Erie. For 2005, research will center on data necessary to update mathematical models of Lake Erie’s response to nutrients, and the updating of the models for management use.



The regression lines for periods, 1983-1988 and 1990-2003 are highly significant. Note the Great Lakes Water Quality Agreement Objective of 10ug-P/l.

Source: Great Lakes National Program Office annual monitoring program, Great Lakes Environmental Database. See <http://www.epa.gov/grtlakes/glindicators/index.html>

### *Great Lakes Legacy Act*

These efforts will be buttressed by the Great Lakes Legacy Act, which targets additional resources to clean up contaminated sediments. Sediment contamination is a significant source of Great Lakes toxic pollutants and can impact human health via the bio-accumulation of toxic substances through the food chain. Reporting in 2005 is expected to show that EPA and its

<sup>78</sup> U.S. EPA. Great Lakes National Program Office. April 1997. *The Great Lakes Binational Toxics Strategy*. Washington, DC. Available online at <http://www.epa.gov/glnpo/p2/bns.html>.

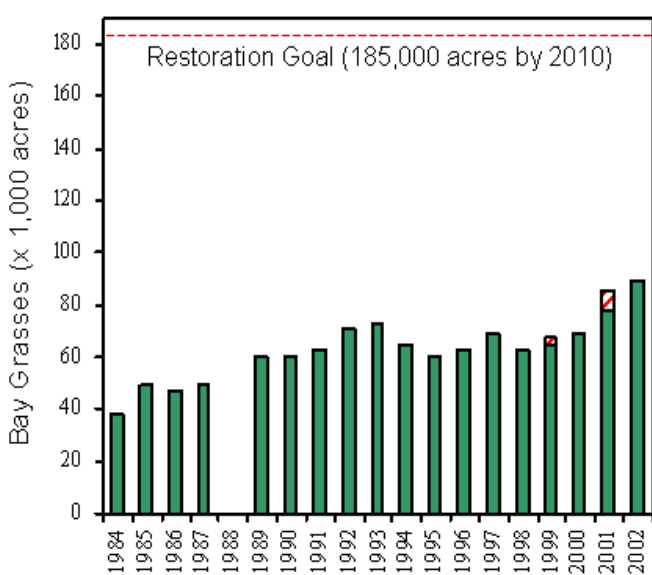
partners will have remediated a cumulative total of 2.9 million cubic yards of contaminated sediments since tracking began in 1997. In the second year of this program, EPA will support six projects for remediation which would result in cleanup of a quarter million cubic yards of contaminated sediments.

### Chesapeake Bay

EPA’s work in the Chesapeake Bay is based on a unique regional partnership formed to direct and conduct restoration of the Chesapeake Bay. Partners include Maryland, Virginia and Pennsylvania; the District of Columbia; the Chesapeake Bay Commission, a tri-state legislative body; EPA, which represents the Federal government; and participating citizen advisory groups. A comprehensive and far-reaching agreement will guide their restoration and protection efforts through 2010. That agreement, Chesapeake 2000, focuses on improving water quality as the most critical element in the overall protection and restoration of the Bay and its tributaries.

One of the key measures of success in achieving improved Bay water quality will be the restoration of submerged aquatic vegetation (SAV). SAV is one of the most important biological communities in the Bay, producing oxygen, nourishing a variety of animals, providing shelter and nursery areas for fish and shellfish, reducing wave action and shoreline erosion, absorbing nutrients such as phosphorus and nitrogen, and trapping sediments. While recent improvements in water quality have contributed to a resurgence in SAV (from a low of 38,000 acres in 1984 to more than 89,000 acres today), more improvements are needed. As a measure of improved water quality in the Bay, in FY 2005, there will be 91,000 acres of SAV.

## Acres of Bay Grasses



**GOAL: 185,000 acres by 2010.**

**STATUS: Total acreage in 2002 is estimated to be 89,658. The increases seen in 2001 and 2002 reflect a strong recovery of grasses in portions of the middle Bay.**

\*Note – Hatched area of bar includes estimated additional acreage. No survey in 1988.  
Source: Chesapeake Bay Program.



To achieve improved water quality and restore submerged aquatic vegetation, Bay partners have committed to reducing nutrient and sediment pollution loads sufficiently to remove the Bay and the tidal portions of its tributaries from the list of impaired waters. Key elements of state strategies to achieve these reductions include implementing advanced treatment of wastewater to reduce nutrient discharges, a range of management practices to reduce nutrients and sediments from farms, and the restoration and protection of riparian forests that serve as a buffer against sediment and nutrient pollution that enters waterways from the land.

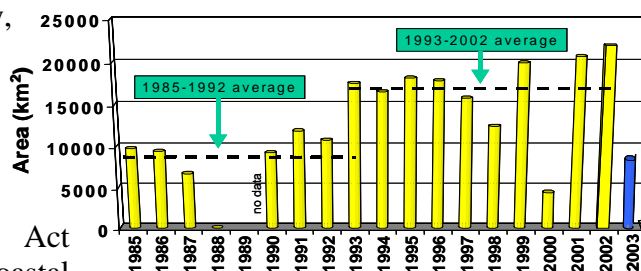
EPA has identified a number of actions that will contribute to achievement of the program goals. For example, EPA will work with the Bay Program partners to implement a SAV strategy and water quality criteria for protecting SAV; collaborate with the U.S. Forest Service to ensure effective strategies to conserve forest buffers; and ensure that states are implementing existing tributary strategies and are on schedule to implement new water quality standards/allocations through e.g., installation of biological nutrient removal at wastewater treatment facilities and effective storm water and CAFO permits.

### *Gulf of Mexico*

EPA’s efforts in the Gulf of Mexico directly support a broad multi-organizational Gulf states-led partnership comprised of regional; business and industry; agriculture; State and local government; citizens; environmental and fishery interests; and, numerous Federal departments and agencies. EPA provides the underlying facilitation and technical support necessary to empower and exploit the partnership’s capacity to protect and restore the health and productivity of this complex ecosystem in ways consistent with the economic well-being of the region. Through this collaborative framework, the Gulf States strategically identify the key environmental issues and work at the regional, state, and local level to define, recommend, and voluntarily implement the supporting solutions.

Gulf of Mexico issues can be broadly categorized as affecting water quality, public health, and habitat loss. Actions identified by the Gulf of Mexico Program and its partners support efforts to restore impaired waterbodies to achieve levels that meet state water quality standards and strengthen Clean Water Act implementation; to increase acres of coastal wetland habitats; to reduce contamination of local

**Areal Extent of Hypoxic Zone 1985 - 2003**



(source: N. Rabalais, LUMCON)

beaches; to reduce nutrient loadings to watersheds; and, to initiate and lead efforts to address multi-jurisdictional problems such as the hypoxic zone in the Gulf of Mexico. A continued focus on protecting and restoring aquatic life and recreational uses ensures that local communities directly benefit from an improved quality of life and that the Gulf as a whole ultimately benefits from the culmination of community watershed restoration efforts. These local efforts substantially increase regional understanding of the Gulf as an ecological system and lead to improved capabilities to assess, evaluate, manage, and communicate progress.

### ***Other Geographic Areas/Targeted Watershed Grants***

EPA will continue efforts to provide targeted support to special ecosystems, including those with statutorily authorized protection programs. Efforts in Lake Champlain will continue to support the successful interstate, interagency, and international partnership undertaking the implementation of “Opportunities for Action,” a plan designed to address various threats to the Lake’s water quality, including phosphorus loadings, invasive species and toxic substances. EPA will also provide targeted support to the Long Island Sound, continuing implementation of the Sound’s Comprehensive Conservation and Management Plan (CCMP), approved in 1994. Activities will focus on six areas identified in the plan as requiring special attention: hypoxia, toxic contamination, pathogens, floatable debris, the impact of habitat degradation on the health of living resources, and land use and development.

Our Targeted Watershed Grants program will enter its third year, supporting competitive grants to watershed stakeholders ready to undertake immediate action to improve water quality and to improve watershed protection measures with tools, training and technical assistance. Of these funds, \$10 million will be set-aside for a new regional pilot program. For 2005, the pilot will take place in the Chesapeake Bay watershed, and will focus on helping publicly-owned treatment works (POTWs) reduce nutrient discharges to the Bay through nonpoint source projects. In addition, the Targeted Watersheds program will give special emphasis to projects that promote water quality trading opportunities to more efficiently achieve water quality benefits through market-based approaches. Projects will demonstrate the effectiveness of these approaches, with a particular emphasis on trades involving both point and nonpoint sources of pollution.

### **FY 2005 CHANGE FROM FY 2004**

#### **EPM**

- +\$30,000,000: Will support contaminated sediment remediation pursuant to the Great Lakes Legacy Act, including additional contaminated sediment cleanups, site assessments, alternatives analyses, and remedial design at Great Lakes Areas of Concern.
- +\$3,000,000: Will support Lakewide Management Plan and Remedial Action Plan implementation by re-building State and local capacity for Great Lakes restoration and initiation of projects to restore impaired beneficial uses (e.g., addressing beach closings, tainted fish and improving habitat) at Great Lakes Areas of Concern.
- There are increases for payroll, cost of living and enrichment for existing FTE.

#### **STAG**

- +\$5,000,000: For Targeted Watershed Grants (supplemented by a redirection within the base of an additional \$5,000,000) to help municipalities meet requirements for nutrient loading reductions.



# **ANNUAL PERFORMANCE GOALS AND MEASURES**

## **GOAL: HEALTHY COMMUNITIES AND ECOSYSTEMS**

### **OBJECTIVE: ECOSYSTEMS**

#### **Protecting and Enhancing Estuaries**

In 2005 Working with NEP partners, protect or restore an additional 25,000 acres of habitat within the study areas for the 28 estuaries that are part of the National Estuary Program (NEP).

In 2004 Restore and protect estuaries through the implementation of Comprehensive Conservation and Management Plans (CCMPs).

In 2003 Restored and protected estuaries through the implementation of Comprehensive Conservation and Management Plans (CCMPs).

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Acres of habitat restored and protected nationwide as part of the National Estuary Program. (incremental)	118,171	25,000	25,000	Acres

Baseline: As of January 2000, there were over 600,000 acres of habitat preserved, restored, and/or created.

#### **Gulf of Mexico**

In 2005 Prevent water pollution and protect aquatic species in order to improve the health of the Gulf of Mexico.

In 2004 Assist the Gulf States in implementing watershed restoration actions in 14 priority impaired coastal river and estuary segments.

In 2003 Assisted the Gulf States in implementing watershed restoration actions in 14 priority impaired coastal river and estuary segments.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Impaired Gulf coastal river and estuary segments implementing watershed restoration actions (incremental).	95	71/5 yr rollavg		Segments
Reduce releases of nutrients throughout the Mississippi River Basin that affect the size of the hypoxic zone in the Gulf of Mexico, as measured by the five year running average			Less than 14,128	KM2

Baseline: There are 95 coastal watersheds at the 8-digit hydrologic unit code (HUC) scale on the Gulf coast. The Gulf of Mexico Program has identified 12 priority coastal areas for assistance. These 12 areas include 30 of the 95 coastal watersheds. Within the 30 priority watersheds, the Gulf States have identified 354 segments that are impaired and not meeting full designated uses under the States' water quality standards. The 1996-2000 running average size = 14,128 km2.

#### **Wetland and River Corridor Projects**

In 2005 Working with partners, achieve a no net loss of wetlands.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Annually, in partnership with the Corps of Engineers and States, achieve no net loss of wetlands in the Clean Water Act section 404 regulatory program			No Net Loss	Acres
Working with partners, achieve no net loss of wetland acres			No Net Loss	Acres

Baseline: Annual net loss of an estimated 58,500 acres. In partnership with the Corps of Engineers, a baseline and initial reporting will begin in FY 2004 on net loss of wetlands in the CWA Section 404 regulatory programs.

#### **Great Lakes Assessment and Implementation Actions**

In 2005 Prevent water pollution and protect aquatic systems so that overall ecosystem health of the Great Lakes is improved by at least 1 point.

In 2004 Great Lakes ecosystem components will improve, including progress on fish contaminants, beach closures, air toxics, and trophic status.

In 2003 End of year data will be available in 2004 to verify that Great Lakes ecosystem components have improved, including progress on fish contaminants, beach closures, air toxics, and trophic status.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud. Data Lag	FY 2005 Pres. Bud. 5%	
Long-term concentration trends of toxics (PCBs) in Great Lakes top predator fish.				Annual decrease
Long-term concentration trends of toxic chemicals in the air.		Data Lag	7%	Annual decrease
Total phosphorus concentrations (long-term) in the Lake Erie Central Basin.		18.4	10	Ug/l
Average concentrations of PCBs in whole lake trout and walleye samples will decline.			5%	Annual Decrease
Average concentrations of toxic chemicals in the air in the Great Lakes basin will decline			5%	Annual Decrease
Restore and delist Areas of Concern (AOCs) within the Great Lakes basin			3	AOC
Cubic yards (in millions) of contaminated sediment remediated in the Great Lakes (cumulative from 1997).			2.9	Cubic Yards/M

Baseline: In 2003, Great Lakes rating of 20 on a 40 point scale where the rating uses select Great Lakes State of the Lakes Ecosystem indicators based on a 1 to 5 rating system for each indicator, where 1 is poor and 5 is good. The trend (starting with 1972 data) for toxics in Great Lakes top predator fish is expected to be less than 2 parts per million (the FDA action level) but far above the Great Lakes Initiative target or levels at which fish advisories can be removed. The trend (starting with 1992 data) for PCB concentrations in the air is expected to range from 50 to 250 picograms per cubic meter. In 2002, no Areas of Concern had been delisted. 2.1 million yards of remediated sediments are the cumulative number of yards from 1997 - 2001.

#### Chesapeake Bay Habitat

- In 2005 Prevent water pollution and protect aquatic systems so that overall aquatic system health of the Chesapeake Bay is improved enough so that there are 91,000 acres of submerged aquatic vegetation. (cumulative)
- In 2005 Reduce nitrogen loads by 74 million pounds per year; phosphorus loads by 8.7 million pounds per year, and sediment loads by 1.06 million tons per year from entering the Chesapeake Bay, from 1985 levels
- In 2004 Improve habitat in the Chesapeake Bay.
- In 2003 Improved habitat in the Chesapeake Bay.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud. 74/8.7/1.06	
Reduction, from 1985 levels, of nitrogen (M/lbs), phosphorus (M/lbs), and sediment loads (tons) entering Chesapeake Bay. (cumulative)				Lbs/Lbs/Tons
Acres of submerged aquatic vegetation (SAV) present in the Chesapeake Bay. (cumulative)	89,659	90,000	91,000	Acres

Baseline: In 1984, there were 37,000 acres of submerged aquatic vegetation in the Chesapeake Bay. In 2002, baseline for nitrogen loads was 51 million pounds per year; phosphorus loads was 8.0 million pounds per year; and sediment loads was 0.8 million tons per year.

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

**FY 2005 Performance Measure: Acres of habitat restored and protected nationwide as part of the National Estuary Program (NEP).**

**Performance Database:** The Office of Wetlands Oceans and Watersheds has developed a standardized format for data reporting and compilation, defining habitat protection and restoration activities and specifying habitat categories. We have also designed a web page that, in an educational fashion with graphics and images, highlights habitat loss/alteration, as well as,

the number of habitat acres protected and restored by habitat type, based on specific NEP reports. This enables EPA to provide a visual means of communicating NEP performance and habitat protection and restoration progress to a wide range of stakeholders and decision-makers.

**Data Source:** NEP documents such as annual work plans (which contain achievements made in the previous year) and annual progress reports are used, along with other implementation tracking materials, to document the number of acres of habitat restored and protected. EPA then aggregates the data provided by each NEP to arrive at a national total for the entire Program. EPA is confident that the data presented are as accurate as possible, based on review and inspection by each NEP prior to reporting to EPA. In addition, EPA conducts regular reviews of NEP implementation to help ensure that information provided in these documents is generally accurate, and progress reported is in fact being achieved.

**Methods, Assumptions and Suitability:** Measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported, or of the estuary overall, but it is a suitable measure of on-the-ground progress. We recognize that habitat acreage does not necessarily correspond one-to-one with habitat quality, nor does habitat (quantity or quality) represent the only indicator of ecosystem health. Nevertheless, habitat acreage serves as an adequate surrogate, and is a suitable measure of on-the-ground progress made toward EPA's annual performance goal of habitat protection and restoration in the NEP.

**QA/QC Procedures:** Primary data are prepared by the staff of the NEP based on their own reports and from data supplied by other partnering agencies/organizations (that are responsible for implementing the action resulting in habitat protection and restoration). The NEP staff is requested to follow guidance provided by EPA to prepare their reports, and to verify the numbers. EPA then confirms that the national total accurately reflects the information submitted by each program. The Office of Water Quality Management Plan (QMP), renewed every five years, was approved in July 2001. EPA requires that each organization prepare a document called a quality management plan (QMP) that: documents the organization's quality policy; describes its quality system; and identifies the environmental programs to which the quality system applies (e.g., those programs that involves the collection or use of environmental data.)

**Data Quality Review:** No audits or quality reviews conducted yet.

**Data Limitations:** It is still early to determine the full extent of data limitations. Current data limitations include: information that may be reported inconsistently (based on different interpretations of the protection and restoration definitions), acreage that may be miscalculated or misreported, and acreage that may be double counted (same parcel may also be counted by partnering/implementing agency or need to be replanted multiple years). In addition, measuring the number of acres of habitat restored and protected may not directly correlate to improvements in the health of the habitat reported (particularly in the year of reporting), but is rather a measure of on-the-ground progress made by the NEPs.

**Error Estimate:** No error estimate is available for this data.

**New/Improved Data or Systems:** We are examining the possibility of geo-referencing the data in a geographic information system (GIS).

**References:** Aggregate national and regional data for this measurement, as well as data submitted by the individual National Estuary Programs, is displayed numerically, graphically, and by habitat type in the Performance Indicators Visualization and Outreach Tool (PIVOT). PIVOT data is publicly available at <http://www.epa.gov/owow/estuaries/pivot/overview/intro.htm>. The Office of Water Quality Management Plan (July 2001) is available on the Intranet at <http://intranet.epa.gov/ow/infopolicy.html>.

**FY 2005 Performance Measure: Annually, beginning in FY04 and in partnership with the Corps of Engineers and states, achieve no net loss of wetlands in the Clean Water Act Section 404 regulatory program.**

**Performance Database:** Since 1989, the goal of the Clean Water Act Section 404 program has been no net loss of wetlands.

Historically, the Corps has collected limited data on wetlands losses and gains in its RAMS permit tracking database. The Corps has compiled national Section 404 wetland permitting data for the last 10 years reflecting wetland acres avoided (through the permit process), permitted for impacts, and mitigated.

Corps national data for the last 10 years (1993-2002):

- 44,000 acres mitigated/year
- 6,000 acres avoided/year

= Total of 50,000 acres/year of wetlands offset or preserved while allowing for development activities (approximately 24,000 acres of impacts authorized per year).

**Data Source:** Data included in RAMS is generally collected by private consultants hired by permit applicants or Corps Regulatory Staff. Data input is generally done by Corps staff.

**Methods, Assumptions and Suitability:** RAMS was designed to be an administrative aid in tracking permits, thus it lacks many of the fields necessary to adequately track important information regarding wetland losses and gains. Also, the database was modified differently for each of the 38 Corps Districts making national summaries difficult. Furthermore, the database is also proprietary making it difficult to retrofit without utilizing its original developers.

**QA/QC Procedures:** Historically, there has not been a high level of QA/QC with regard to data input into RAMS. Its antiquated format and numerous administrative fields discourage use. Lack of standard terms and classification also make all aspects of data entry problematic.

**Data Quality Reviews:** Independent evaluations published in 2001 by the National Academy of Sciences (NAS) and the General Accounting Office (GAO) provided a critical evaluation of the effectiveness of wetlands compensatory mitigation (the restoration, creation, or enhancement of wetlands to compensate for permitted wetland losses) for authorized losses of wetlands and other waters under Section 404 of the Clean Water Act. The NAS determined that available data was insufficient to determine whether or not the Section 404 program was meeting its goal of no net loss of either wetland area or function. The NAS added that available data suggested that the

program was not meeting its no net loss goal. Among its suite of recommendations, the NAS noted that wetland area and function lost and regained over time should be tracked in a national database and that the Corps should expand and improve quality assurance measures for data entry.

In response to the NAS, GAO, and other recent critiques of the effectiveness of wetlands compensatory mitigation, EPA and the Corps in conjunction with the Departments of Agriculture, Commerce, Interior, and Transportation released the National Wetlands Mitigation Action Plan on December 26, 2002. The Plan includes 17 tasks that the agencies will complete over the next three years to improve the ecological performance and results of compensatory mitigation.

One of the major goals articulated in the 2002 interagency National Wetlands Mitigation Action Plan (MAP) is improving data collection and availability (including tracking and reporting on acreage and function gains and losses). MAP includes three action items the agencies will complete over the next two years that will improve their ability to track and report on wetlands gains and losses. Additional details of the milestones shown below are contained in the MAP: <http://www.epa.gov/owow/wetlands/guidance/index.html#mitigation>.

- The Corps, EPA, USDA, DOI, and NOAA, in conjunction with states and Tribes, compiling and disseminating information regarding existing mitigation-tracking database systems in FY04.
- Building upon the analysis of existing mitigation data base systems, the Corps, EPA, USDA, DOI, and NOAA will establish a shared mitigation database by FY05.
- Utilizing the shared database, the Corps, in conjunction with EPA, USDA, DOI, and NOAA, will provide an annual public report card on compensatory mitigation to complement reporting of other wetlands programs by FY05.

**Data Limitations:** As previously noted, RAMS currently provides the only national data on wetlands losses and gains in the Section 404 Program. Also, as previously noted, there are a number of concerns regarding the conclusions that can be drawn from these numbers. Data quality issues include:

1. Inability to separate restoration, creation, enhancement and preservation acreage from the aggregate “mitigation” acreage reported
2. Lack of data regarding how much designated mitigation acreage was actually undertaken, and how much of that total was successful
3. Lack of data regarding how much of the permitted impacts actually occurred, and
4. Limitations on identifying acres “avoided,” as the figure is only based on the difference between original proposed impacts and impacts authorized. Often, permit applicants who are aware of the 404 program’s requirements to avoid and minimize impacts to wetlands, make initial site selection and site design decisions that minimize wetland impacts prior to submitting a permit application. Such avoidance decisions benefit applicants, as their applications are more likely to be accepted and processed with minor changes. This behavioral influence that the program engenders is difficult to capture and quantify, but contributes considerable undocumented "avoided" impacts.

**Error Estimate:** Not applicable

**New/Improved Data or Systems:** The EPA and the Corps have acknowledged the need for improved 404 tracking. Corps is currently piloting a new national permit tracking database called ORM to replace its existing database (RAMS). As part of the MAP, the Corps is working with EPA and the other Federal agencies and states to ensure that the version of ORM that is ultimately deployed will adequately track wetlands gains and losses. ORM is being designed to provide improved tracking regarding:

- Type of impacts
- Type of habitat impacted (Using Hydrogeomorphic and Cowardin classification systems)
- Type of habitat mitigated (Using Hydrogeomorphic and Cowardin classification systems)
- Type of mitigation (restoration, creation, enhancement, or preservation)
- Amount of mitigation by type
- Differentiate stream mitigation (in linear feet) from wetlands mitigation (in acres)
- Spatial tracking via GIS for both impact and mitigation sites (*planned*)

**References:**

<http://www.epa.gov/owow/wetlands/guidance/index.html#mitigation>

**FY 2005 Performance Measure: Prevent water pollution and protect aquatic ecosystems so that overall ecosystem health of the Great Lakes is improved.**

**Performance Database:** US EPA's Great Lakes National Program Office (GLNPO) will collect and track the components of the index and publish the performance results as part of annual reporting under the Government Performance and Results Act (GPRA) and as online reporting of GLNPO's monitoring program, <http://epa.gov/glnpo/glindicators/index.html> . Extensive databases for the indicator components are maintained by GLNPO (phosphorus concentrations, contaminated sediments, benthic health, fish tissue contamination), by binational agreement with Environment Canada (air toxics deposition) or other entities (coastal wetlands), and by local authorities who provide data to EPA (drinking water quality, beach closures).

**Data Source:** Data for the index components are tracked internally and reported at the State of the Lakes Ecosystem Conferences (SOLEC). The document, "Implementing Indicators 2003-A Technical Report," presents detailed indicator reports as prepared by primary authors (attending the conference), including references to data sources found in the summary document.

**Methods, Assumptions, and Suitability:** The Index is based on a 40 point scale where the rating uses select Great Lakes State of the Lakes Ecosystem indicators (i.e., coastal wetlands, phosphorus concentrations, Areas of Concern (AOC), sediment contamination, benthic health, fish tissue contamination, beach closures, drinking water quality, and air toxics deposition). Each component of the Index is based on a 1 to 5 rating system, where 1 is poor and 5 is good. Authors of SOLEC indicator reports use best professional judgment to assess the overall status of the ecosystem component in relation to established endpoints or ecosystem objectives, when available. Each of the index components is included in the broader suite of Great Lakes indicators, which was developed through an extensive multi-agency process to satisfy the overall criteria of necessary, sufficient and feasible. Information on the selection process is in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

**QA/QC Procedures:** GLNPO has an approved Quality Management system in place<sup>1</sup> that conforms to the EPA quality management order and is audited every 3 years in accordance with Federal policy for Quality Management.

**Data Quality Review:** GLNPO's quality management system has been given "outstanding" evaluations in previous peer and management reviews<sup>2</sup>. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

**Data Limitations:** Data limitations vary among the indicator components of the Index. The data are especially good for phosphorus concentrations, fish tissue contamination, benthic health, and air toxics deposition. The data associated with other components of the index (coastal wetlands, AOC sediment contamination, beach closures, and drinking water quality) are more qualitative. Some are distributed among several sources, and without an extensive trend line. Limitations for each of the index components are included in the formal indicator descriptions in the document, "Selection of Indicators for Great Lakes Basin Ecosystem Health, Version 4."

**Error Estimate:**

Error statistics for the Great Lakes Index have not been quantified. Each unit of the 40 point scale represents 2.5% of the total, so any unit change in the assessment of one of the component indicators would result in a change of the index of that magnitude. The degree of environmental change required to affect an indicator assessment, however, may be significantly large.

**New/Improved Data or Systems:** The data system specifically for this index is being developed. Data continue to be collected through the SOLEC process by various agencies, including GLNPO. Efforts are currently in progress to integrate various Great Lakes monitoring programs to better meet SOLEC objectives and to increase efficiencies in data collection and reporting.

**References:**

1. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.
2. "GLNPO Management Systems Review of 1999." Unpublished - in USEPA Great Lakes National Program Office files.
3. Canada and the United States. "State of the Great Lakes 2003." ISBN 0-662-34798-6, Environment Canada, Burlington, Ontario, Cat. No. En40-11/35-2003E, and U.S.
4. Environmental Protection Agency, Chicago, EPA 905-R-03-004. 2003. Available on CD and online at <[www.binational.net](http://www.binational.net)>.
5. Canada and the United States. "Implementing Indicators 2003 - A Technical Report." ISBN 0-662-34797-8 (CD-Rom), Environment Canada, Burlington, Ontario, Cat. No. En164-1/2003E-MRC (CD-Rom), and U.S. Environmental Protection Agency, Chicago, EPA 905-R-03-003. 2003. Available on CD from U.S. EPA/Great Lakes National Program Office, Chicago.
6. Bertram, Paul and Nancy Stadler-Salt. "Selection of Indicators for Great Lakes Basin

Ecosystem Health, Version 4.” Environment Canada, Burlington, Ontario, and U.S. EPA, Chicago. 2000. Available online at <www.binational.net>.

**FY 2005 Performance Measure: The average concentrations of PCBs in whole lake trout and walleye.**

**Performance Database:** Great Lakes National Program Office (GLNPO) base monitoring program<sup>1</sup>. The key fields for this measure are Lake Trout and Walleye (Lake Erie). Reporting starts with 1972 data for Lake Michigan and 1977 or 1978 data for the other Lakes. In FY05, the database will contain QA/QC data from fish collected in 2003.

**Data Source:** GLNPO’s ongoing base monitoring program, which has included work with cooperating organizations such as the U.S. Geological Survey (USGS) and the U.S. Fish and Wildlife Survey (USFWS).

**Methods, Assumptions, and Suitability:** This indicator provides concentrations of selected organic contaminants in sport fish from the Great Lakes to: (1) determine time trends in contaminant concentrations, (2) assess impacts of contaminants on the fishery, and (3) to assess potential human and wildlife exposures from consuming contaminated sport fish. The data provide two elements of contaminant concentrations: The first element includes data from 600-700 mm lake trout (*Salvelinus namaycush*) whole fish composites (5 fish) from each of the lakes (walleye, *Stizostedion vitreum vitreum*, in Lake Erie). These data are used to assess time trends in organic contaminants in the open waters of the Great Lakes, using fish as biomonitors. These data can also be used to assess the risks of such contaminants on the health of this important fishery, and on wildlife that consume them.

The second element of the indicator focuses on assessing human exposures via consumption of popular sport fish. Coho (*Oncorhynchus kisutch*) and chinook salmon (*Oncorhynchus tshawytscha*) from each lake (rainbow trout, *Salmo gairdneri*, in Lake Erie) are collected during the fall spawning run, and composite fillets (5 fish) are analyzed for organic contaminants to assess human exposure. The coho salmon spawn at 3 years of age, and so their body burdens reflect a more focused and consistent exposure time compared to the lake trout which may integrate exposures over 4 to 10 yrs depending on the lake. Chinook salmon spawn after 4-5 years, and have higher (and thus more detectable) concentrations than the coho salmon and also represent a consistent exposure time. Thus time trends for consistent age fish as well as consistent size fish can be assessed from these data.

**QA/QC Procedures:** GLNPO has an approved Quality Management system in place<sup>2</sup> that conforms to the EPA quality management order and is audited every 3 years in accordance with Federal policy for Quality Management. The Quality Assurance (QA) plan that supports the fish contaminant program is approved and available on request<sup>3</sup>. The draft field sampling Quality Assurance Project Plan (QAPP) is being revised and will be submitted to the GLNPO QA officer for review by September 30, 2003<sup>4</sup>.

**Data Quality Review:** GLNPO’s quality management system has been evaluated as “outstanding” in previous peer and management reviews<sup>5</sup>. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.



**Data Limitations:** The top predator fish (lake trout) program was designed specifically for lakewide trends. It is not well suited to portray localized changes.

**Error Estimate:** The goal of the fish contaminant program is to detect a 20% change in each measured contaminant concentration between two consecutively sampled periods at each site. The program was designed to reach that goal with 95% confidence.

**New/Improved Data or Systems:** The GLENDA database is a significant new system with enhanced capabilities. Existing and future fish data will be added to GLENDA.

*“The Great Lakes Fish Monitoring Program - A technical and Scientific Model For Interstate Environmental Monitoring.”* September, 1990. EPA503/4-90-004.

*“Great Lakes National Program Office Indicators. Fish Indicators.”*  
<http://www.epa.gov/glnpo/glindicators/fishcontaminants.html>

*“Trends in Great Lakes Fish Contaminants”*, Dr. Deborah Swackhammer, Univ of Minnesota Environ. Occ. Health, School of Public Health, EPA Grant #GL97524201-2, 7/1/02. De Vault, D. S. 1984. Contaminant analysis of fish from Great Lakes harbors and tributary mouths. U.S. Environmental Protection Agency, Great Lakes National Program Office. EPA 905/3-84-003.

De Vault, D. S. 1985. Contaminants in fish from Great Lakes harbors and tributary mouths. Archives of Environmental Contamination and Toxicology 14: 587-594.

De Vault, D. S., P. Bertram, D. M. Whittle and S. Rang. 1995. Toxic contaminants in the Great Lakes. State of the Great Lakes Ecosystem Conference (SOLEC). Chicago and Toronto, U.S. Environmental Protection Agency, Great Lakes National Program Office and Environment Canada.

De Vault, D. S., R. Hesselberg, P. W. Rodgers and T. J. Feist. 1996. Contaminant trends in lake trout and walleye from the Laurentian Great Lakes. Journal of Great Lakes Research 22: 884-895.

De Vault, D. S. and J. A. Weishaar. 1983. Contaminant analysis of 1981 fall run coho salmon. U.S. Environmental Protection Agency, Great Lakes National Program Office. EPA 905/3-83-001.

De Vault, D. S. and J. A. Weishaar. 1984. Contaminant analysis of 1982 fall run coho salmon. U.S. Environmental Protection Agency, Great Lakes National Program Office. EPA 905/3-85-004.

De Vault, D. S., J. A. Weishaar, J. M. Clark and G. Lavhis. 1988. Contaminants and trends in fall run coho salmon. Journal of Great Lakes Research 14: 23-33.

De Vault, D. S., W. A. Willford, R. Hesselberg, E. Nortrupt and E. Rundberg. 1985. Contaminant trends in lake trout (*Salvelinus namaycush*) from the upper Great Lakes. Archives of Environmental Contamination and Toxicology 15: 349-356.

De Vault, D. S., W. A. Willford, R. J. Hesselberg and D. A. Nortrupt. 1986. Contaminant trends in lake trout (*Salvelinus namaycush*) from the upper Great Lakes. *Archives of Environmental Contamination and Toxicology* 15: 349-356.

Eby, L. A., C. A. Stow, R. J. Hesselberg and J. F. Kitchell. 1997. Modeling changes in growth and diet on polychlorinated biphenyl bioaccumulation in "*Coregonus hoyi*". *Ecological Applications* 7(3): 981-990.

Giesy, J. P., et al. 1995. Contaminants in fishes from Great Lakes influenced sections and above dams of three Michigan rivers: III. Implications for health of bald eagles. *Archives of Environmental Contamination and Toxicology* 29: 309-321.

Giesy, J. P., J. P. Ludwig and D. E. Tillett. 1994. Deformities in birds of the Great Lakes region: assigning causality. *Environmental Science and Technology* 28(3): 128A-135A.

Giesy, J. P., et al. 1994. Contaminants in fishes from Great Lakes-influenced sections and above dams of three Michigan rivers. II: Implications for health of mink. *Archives of Environmental Contamination and Toxicology* 27: 213-223.

Glassmeyer, S. T., D. S. De Vault, T. R. Myers and R. A. Hites. 1997. Toxaphene in Great Lakes fish: a temporal, spatial, and trophic study. *Environmental Science and Technology* 31: 84-88.

Glassmeyer, S. T., K. E. Shanks and R. A. Hites. 1999. Automated toxaphene quantitation by GC/MS. *Analytical Chemistry* in press.

GLNPO. 1981. A Strategy for Fish Contaminant Monitoring in the Great Lakes. USEPA Great Lakes National Program Office. .

Jeremiason, J. D., K. C. Hornbuckle and S. J. Eisenreich. 1994. PCBs in Lake Superior, 1978-1992: decreases in water concentrations reflect loss by volatilization. *Environmental Science and Technology* 28(5): 903-914.

Kubiak, T. J., Harris, H. J., Smith, L. M., Schwartz, T. R., Stalling, D. L., Trick, J. A., Sileo, L., Docherty, D. E., and Erdman, T. C. 1989. Microcontaminants and reproductive impairment of the Forster's Tern on Green Bay, Lake Michigan - 1983. *Archives of Environmental Contamination and Toxicology* 18: 706-727.

Mac, M. J. and C. C. Edsal. 1991. Environmental contaminants and the reproductive success of lake trout in the Great Lakes. *J. Tox. Environ. Health*. 33: 375-394.

Mac, M. J., T. R. Schwartz, C. C. Edsall and A. M. Frank. 1993. Polychlorinated biphenyls in Great Lakes lake trout and their eggs: relations to survival and congener composition 1979-1988. *Journal of Great Lakes Research* 19(4): 752-765.

Madenjian, C. P., T. J. DeSorcie, R. M. Stedman, E. H. J. Brown, G. W. Eck, L. J. Schmidt, R. J. Hesselberg, S. M. Chernyak and D. R. Passino-Reader. 1999. Spatial patterns in PCB concentrations of Lake Michigan lake trout. *Journal of Great Lakes Research* 25(1): 149-159.

- Madenjian, C. P., R. J. Hesselberg, T. J. Desorcie, L. J. Schmidt, R. M. Stedman, L. J. Begnoche and D. R. Passino-Reader. 1998. Estimate of net trophic transfer efficiency of PCBs to Lake Michigan lake trout from their prey. *Environmental Science and Technology* 32(7): 886-891.
- Pearson, R. F., K. C. Hornbuckle, S. J. Eisenreich and D. L. Swackhammer. 1996. PCBs in Lake Michigan water revisited. *Environ. Sci. & Technol.* 30(5): 1429-1436.
- Rodgers, P. W. and W. R. Swain. 1983. Analysis of polychlorinated biphenyl (PCB) loading trends in Lake Michigan. *Journal of Great Lakes Research* 9: 548-558.
- Safe, S. H. 1994. Polychlorinated biphenyls (PCBs): environmental impact, biochemical and toxic responses, and implications for risk. *CRC Critical Reviews in Toxicology* 24(2): 87-149.
- Schmidt, L. J., and Hesselberg, R. J. 1992. A mass spectroscopic method for analysis of AHH-inducing and other polychlorinated biphenyl congeners and selected pesticides in fish. *Archives of Environmental Contamination and Toxicology* 23: 37-44.
- Stow, C. A. 1995. Factors associated with PCB concentrations in Lake Michigan salmonids. *Environmental Science and Technology* 29(2): 522-527.
- Stow, C. A., S. R. Carp and J. F. Amrhein. 1994. PCB concentration trends in Lake Michigan coho (*Oncorhynchus kisutch*) and chinook salmon (*O. tshawytscha*). *Canadian Journal of Fisheries and Aquatic Science* 51: 1384-1390.
- Stow, C. A. and S. R. Carpenter. 1994. PCB accumulation in Lake Michigan coho and chinook salmon: individual-based models using allometric relationships. *Environmental Science and Technology* 28: 1543-1549.
- Stow, C. A., S. R. Carpenter, L. A. Eby, J. F. Amrhein and R. J. Hesselberg. 1995. Evidence that PCBs are approaching stable concentrations in Lake Michigan fishes. *Ecological Applications* 5: 248-260.
- Stow, C. A. and S. S. Qian. 1998. A size-based probabilistic assessment of PCB exposure from Lake Michigan fish consumption. *Environmental Science and Technology* 32: 2325-2330.
- Swackhammer, D., J. Charles and R. Hites. 1987. Quantitation of toxaphene in environmental samples using negative ion chemical ionization mass spectrometry. *Analytical Chemistry* 59: 913-917.
- Swackhammer, D. L. 1996. Studies of polychlorinated biphenyls in the Great Lakes. *Issues in Environmental Science and Technology* 6: 137-153.
- Swackhammer, D. L. and R. A. Hites. 1988. Occurrence and bioaccumulation of organochlorine compounds in fishes from Siskiwit Lake. *Environmental Science and Technology* 22: 543-548.
- Swackhammer, D. L. and A. Trowbridge. 1997. LMMBS Methods Compendium: Vol. 2 Organics and Mercury Sample Analysis Techniques, Chapter 1, Section 042. USEPA. 905-R-97-012b.

Trowbridge, A. G. and D. L. Swackhammer. 1999. Biomagnification of Toxic PCB Congeners in the Lake Michigan Foodweb. Bioaccumulative Toxic Compounds in the Environment. R. Lipnick, D. Muir, J. Hermens and K. C. Jones. Washington, DC, ACS Symposium Series Monograph: in review.

“Quality Management Plan for the Great Lakes National Program Office.” EPA905-R-02-009. October 2002, Approved April 2003.

Swackhammer, D. L. 2001. “*Trends in Great Lakes Fish Contaminants.*” Unpublished - in USEPA Great Lakes National Program Office files.

Swackhammer, D.L. February 2002. “*Trends in Great Lakes Fish Contaminants.*” Unpublished - in USEPA Great Lakes National Program Office files.

“*GLNPO Management Systems Review of 1999.*” Unpublished - in USEPA Great Lakes National Program Office files.

**FY 2005 Performance Measure: Concentration trends of toxic chemicals in the air in the Great Lakes basin will decline.**

**Performance Database:** Great Lakes National Program Office (GLNPO) integrated atmospheric deposition network <sup>1</sup> (IADN) operated jointly with Canada. Reporting starts with 1992 data, collected through the joint US/Canadian Integrated Atmospheric Deposition Program and includes, PCBs, PAHs, and pesticides. Monitoring results from 2003 will be reported in 2005.

**Data Source:** GLNPO and Environment Canada are the principal sources of the data. Data also come through in-kind support and information sharing with other Federal agencies, with Great Lakes’ States, and with Canada.

**Methods, Assumptions, and Suitability:** There are five master IADN stations, one for each lake, which are supplemented by satellite stations in other locations. The master stations are located in remote areas and are meant to represent regional background levels. Concentrations from the master stations are used for the performance measure. Concentrations from the satellite stations in Chicago and Cleveland are also sometimes used to demonstrate the importance of urban areas to atmospheric deposition to the Lakes.

Air samples are collected for 24 hours using hi-volume samplers containing an adsorbent. Precipitation samples are collected as 28-day composites. Laboratory analysis protocols generally call for solvent extraction of the organic sampling media with addition of surrogate recovery standards. Extracts are then concentrated followed by column chromatographic cleanup, fractionation, nitrogen blow-down to small volume (about 1 mL) and injection (typically 1 uL) into GC-ECD or GC-MS instruments.

All IADN data are loaded and quality controlled using the Research Database Management System (RDMQ), a Statistical Analysis System (SAS) program. RDMQ provides a unified set of quality assured data, including flags for each data point that can be used to evaluate the usability of the data. Statistical summaries of annual concentrations are generated by the program and used as input into an atmospheric loading calculation. The loadings calculation is described in detail in the Technical Summary referenced below. However, the averaged annual concentrations rather than the loadings are used in the performance measure.

**QA/QC Procedures:** GLNPO has a Quality Management system in place, which conforms to the EPA quality management order and is audited every 3 years in accordance with Federal policy for Quality Management<sup>2</sup>. Quality Assurance Project Plans are in place for the laboratory grantee, as well as for the network as a whole. A jointly-funded QA contractor conducts laboratory audits and tracks QA statistics. Data from all contributing agencies are quality-controlled using the SAS-based system.

**Data Quality Review:** GLNPO's quality management system has been evaluated as "outstanding" in previous peer and management reviews<sup>3</sup>. This program has a joint Canadian US quality system and workgroup that meets twice a year. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards<sup>4</sup>.

A regular set of laboratory and field blanks is taken and recorded for comparison to the IADN field samples. In addition, a suite of chemical surrogates and internal standards is used extensively in the analyses. A jointly-funded QA contractor conducts laboratory audits and intercomparisons and tracks QA statistics. As previously mentioned, data from all contributing agencies are quality-controlled using a SAS-based system.

**Data Limitations:** The sampling design is dominated by rural sites that under emphasize urban contributions to deposition; thus although the data is very useful for trends information, there is less assurance of the representativeness of deposition to the whole lake. There are gaps in open lake water column organics data, thus limiting our ability to calculate atmospheric loadings.

**Error estimate:** Concentrations have an error of +/- 40%, usually less. Differences between laboratories have been found to be 40% or less. This is outstanding given the very low levels of these pollutants in the air and the difficulty in analysis. The performance measure examines the long-term trend.

**New/Improved Data or Systems:** GLNPO expects to post joint data that has passed quality review to < <http://binational.net/> >, a joint international web site, and to the IADN website at < [www.msc.ec.gc.ca/iadn/](http://www.msc.ec.gc.ca/iadn/) >.

## References:

1. "Great Lakes National Program Office Indicators. Air Indicators."  
<http://www.epa.gov/glnpo/glindicators/atmospheric.html>

Details of these analyses can be found in the Laboratory Protocol Manuals or the agency project plans, which can be found on the IADN resource page  
at:[http://www.msc.ec.gc.ca/iadn/resources/resources\\_e.html](http://www.msc.ec.gc.ca/iadn/resources/resources_e.html)

Overall results of the project can be found in "Technical Summary of Progress under the Integrated Atmospheric Deposition Program 1990-1996" and the Draft "Technical Summary of Progress under the Integrated Atmospheric Deposition 1997-2002". The former can also be found on the IADN resource page.

2. "Quality Management Plan for the Great Lakes National Program Office." EPA905-R-02-009. October 2002, Approved April 2003.

3. “*GLNPO Management Systems Review of 1999.*” Unpublished - in USEPA Great Lakes National Program Office files.

4. “*Integrated Atmospheric Deposition Network Quality Assurance Program Plan - Revision 1.1.*” Environment Canada and USEPA. June 29, 2001. Unpublished - in USEPA Great Lakes National Program Office files.

**FY 2005 Performance Measure: Cumulative total of Areas of Concern within the Great Lakes Basin that have been restored and delisted.**

**Performance Database:** US EPA’s Great Lakes National Program Office will track the cumulative total Areas of Concern (AOC) and post that information <http://www.epa.gov/glnpo/aoc/index.html>> Forty-three AOCs have been identified: 26 located entirely within the United States; 12 located wholly within Canada; and five that are shared by both countries. GLNPO is tracking the 31 which are within the US or shared; however, none of these are currently restored and delisted.

**Data Source:** Internal tracking and communications with Great Lakes States, the US Department of State and the International Joint Commission (IJC).

**Methods, Assumptions, and Suitability:** US EPA’s Great Lakes National Program Office is in regular communication with the Great Lakes States, the US Department of State and the IJC, and is responsible for coordinating and overseeing the de-listing of Areas of Concern.

**QA/QC Procedures:** GLNPO has an approved Quality Management system in place<sup>1</sup> that conforms to the EPA quality management order and is audited every 3 years in accordance with Federal policy for Quality Management

**Data Quality Review:** GLNPO’s quality management system has been given “outstanding” evaluations in previous peer and management reviews<sup>2</sup>. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

**Data Limitations:** None known.

**Error Estimate:** None.

**New/Improved Data or Systems:** NA

**References:**

GLNPO will develop and maintain the appropriate tracking system once there are any de-listed US or Binational Areas of Concern. Information regarding Areas of Concern is currently available online at: <http://www.epa.gov/glnpo/aoc/index.html>

1. “Quality Management Plan for the Great Lakes National Program Office.” EPA905-R-02-009. October 2002, Approved April 2003.
2. “*GLNPO Management Systems Review of 1999.*” Unpublished - in USEPA Great Lakes National Program Office files.

**FY 2005 Performance Measure: Cubic yards of contaminated sediment in the Great Lakes remediated. (cumulative from 1997)**

**Performance Database:** Data tracking sediment remediation are compiled in two different formats. The first is a matrix that shows the cumulative total of contaminated sediment that was remediated in the Great Lakes basin from 1997 to 2002 for each Area of Concern or other non-Areas of Concern with sediment remediation. The second format depicts the yearly totals for sediment remediation projects graphically. These databases are reported approximately one year after the completion of work.

**Data Source:** GLNPO collects sediment remediation data from various state and Federal project managers across the Great Lakes region. These data are obtained directly from the project manager via an information fact sheet the project manager completes for any site in the Great Lakes basin that has performed any remedial work on contaminated sediment. The project manager also indicates whether an approved Quality Assurance Project Plan (QAPP) was used in the collection of data at the site. This is used to decide if the data provided by the project manager are reliable for GLNPO reporting purposes. If an approved QAPP was not used, sediment data would likely not be reported by GLNPO

**Methods, Assumptions, and Suitability:** The data collected to track sediment remediation in the Great Lakes show the amount of sediment remediated for that year, the amount of sediment remediated in prior years, and the amount of sediment remaining to be addressed for a particular site. This format is suitable for year-to-year comparisons for individual sites.

**QA/QC Procedures:** GLNPO relies on the individual government/agency project managers to provide information on whether an approved QAPP was in place during remediation of contaminated sediment. This tracking database houses information on the calculated amount of sediment remediated at individual sites as provided by the project managers. It is then GLNPO's responsibility to determine if the data are usable based upon the information sheet provided by the project managers.

**Data Quality Review:** The data, in both the graphic and matrix formats, are reviewed by management, individual project managers, and GLNPO's Sediment Team Leader prior to being released. GLNPO's quality management system has been given "outstanding" evaluations in previous peer and management reviews. GLNPO has implemented all recommendations from these external audits and complies with Agency Quality standards.

**Data Limitations:** The data provided in the sediment tracking database should be used as a tool to track sediment remediation progress at sites across the Great Lakes. Many of the totals for sediment remediation are estimates provided by project managers. For specific data uses, individual project managers should be contacted to provide additional information.

**Error Estimate:** The amount of sediment remediated or yet to be addressed should be viewed as estimated data. A specific error estimate is not available.

**New/Improved Data or Systems:** Existing tracking systems are anticipated to remain in place.

## References:

1. Collier, D.C. 2002. "*Sediment Remediation Matrix*". Unpublished - in USEPA Great Lakes National Program Office files.
2. Collier, D.C. 2002. "*Sediment Remediation Pie Charts*". Unpublished - in USEPA Great Lakes National Program Office files.
3. Collier, D.C. 2002. "Compilation of Project Managers Informational Sheets". Unpublished - in USEPA Great Lakes National Program Office files.

## **FY 2005 Performance Measure: Acres of submerged aquatic vegetation (SAV) present in the Chesapeake Bay.**

**Performance Database:** SAV acres in Chesapeake Bay. Total acres surveyed and estimated additional acres from 1978 through 2002, excluding the years 1979-1983 and 1988 when no surveys were conducted. FY 2005 Annual Performance Report for this measure will be based on the results of the survey conducted the previous calendar year (2004). We expect to receive the preliminary survey results for calendar year 2004 in April 2005.

**Data Source:** Virginia Institute of Marine Sciences provides the data (via an EPA Chesapeake Bay Program grant to Virginia Institute of Marine Sciences). EPA has confidence in the third party data and believes the data are accurate and reliable based on QA/QC procedures described below.

**Methods, Assumptions and Suitability:** The SAV survey is a general monitoring program, conducted to optimize precision and accuracy in characterizing annually the status and trends of SAV in tidal portions of the Chesapeake Bay. The general plan is to follow fixed flight routes over shallow water areas of the Bay, to comprehensively survey all tidal shallow water areas of the Bay and its tidal tributaries. Non-tidal areas are omitted from the survey. SAV beds less than 1 square meter are not included due to the limits of the photography and interpretation. Annual monitoring began in 1978 and is ongoing. Methods are described in the Quality Assurance Project Plan (QAPP) on file for the EPA grant and at the VIMS web site (<http://www.vims.edu><http://www.vims.edu/bio/sav/>).

**QA/QC Procedures:** Quality assurance project plan for the EPA grant to the Virginia Institute of Marine Sciences describes data collection, analysis, and management methods. This is on file at the EPA Chesapeake Bay Program Office. The VIMS web site at <http://www.vims.edu/bio/sav/> provides this information as well. Metadata are included with the data set posted at the VIMS web site (<http://www.vims.edu/bio/sav/metadata/recent.html>).

**Data Quality Reviews:** This indicator has undergone extensive technical and peer review by state, Federal and non-government organization partner members of the SAV workgroup and the Living Resources subcommittee. Data collection, data analysis and QA/QC are conducted by the principal investigators/scientists. The data are peer reviewed by scientists on the workgroup. Data selection and interpretation, the presentation of the indicator, along with all supporting information and conclusions, are arrived at via consensus by the scientists and resource manager



members of the workgroup. The workgroup presents the indicator to the subcommittee where extensive peer review by Bay Program managers occurs.

No audits have been conducted by the Inspector General (IG) or evaluations by the General Accounting Office (GAO), OMB and National Academy of Public Administration (NAPA). No deficiencies identified in external reviews. Data are not identified as an “Agency-Level or Material Weakness” as a result of EPA decisions under the Federal Managers Financial Integrity Act.

**Data Limitations:** Due to funding constraints, there were no surveys in the years 1979-1983 and 1988. Spatial gaps in 1999 occurred due to hurricane disturbance and subsequent inability to reliably photograph SAV. Spatial gaps in 2001 occurred due to post-nine-eleven flight restrictions near Washington D.C.

**Error Estimate:** No error estimate is available for this data.

**New/Improved Data or Systems:** Some technical improvements (e.g., photointerpretation tools) were made over the 22 years of the annual SAV survey in Chesapeake Bay.

#### **References:**

See Chesapeake Bay SAV special reports at <http://www.vims.edu/bio/sav/savreports.html> and bibliography at <http://www.vims.edu/bio/sav/savchesp.html>. The SAV distribution data files are located at <http://www.vims.edu/bio/sav/savdata.html> and also at <http://www.chesapeakebay.net/pubs/statustrends/88-data-2002.xls>. The SAV indicator is published at <http://www.chesapeakebay.net/status.cfm?sid=88>.

#### **FY 2005 Performance Measures:**

- **Reduce nitrogen loads entering Chesapeake Bay, from 1985 levels (2002 Baseline: 51 million pounds/year reduced.)**
- **Reduce phosphorus loads entering Chesapeake Bay, from 1985 levels. (2002 Baseline: 8 million pounds/year reduced.)**
- **Reduce sediment loads entering Chesapeake Bay, from 1985 levels. (2002 Baseline: 0.8 million tons/year reduced.)**

**Performance Database:** Nutrient and Sediment Loads Delivered to the Chesapeake Bay. The Bay data files used in the indicator are located at <http://www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls>. Data have been collected in 1985, 2000, 2001, and are expected on an annual basis after 2001. There is a two year data lag. Load data are from Chesapeake Bay watershed portions of NY, MD, PA, VA, WV, DE, and DC.

FY 2005 Annual Performance Report for these measures will be based on the results of the 2003 data collection. We expect to receive the preliminary results for calendar year 2003 in April 2005.

**Data Source:** State/district data are provided to the Chesapeake Bay Program Office for input into the Chesapeake Bay Program Watershed Model.

**Methods, Assumptions and Suitability:** The data are of high quality. Data are consolidated by watershed boundaries at the state level and provided to the Chesapeake Bay Program Office for input into the watershed model. Data are collected from states and local governments programs. Methods are described at <http://www.chesapeakebay.net/data/index.htm>, (refer to CBP Watershed Model Scenario Output Database, Phase 4.3). For more information contact Kate Hopkins at [hopkins.kate@epa.gov](mailto:hopkins.kate@epa.gov) or Jeff Sweeney [jsweeney@chesapeakebay.net](mailto:jsweeney@chesapeakebay.net)

**QA/QC Procedures:** State offices have documentation of the databases used indicating the design, construction and maintenance conforming to existing U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS) technical standards and specifications for nonpoint source data and PCS standards for point source data. State offices also have documentation of implemented Best Management Practices (BMPs) based on USDA NRCS standards and specification and the Chesapeake Bay Program's protocols and guidance. BMPs are traditionally used to reduce pollutant loads coming from nonpoint sources such as urban/suburban runoff, agriculture, and forestry activities. Some people also think of nutrient reduction technology used at wastewater treatment plants as a point source BMP, however, in the traditional sense, BMPs have been used to describe the suite of practices used to reduce pollutant loads coming from agricultural, forest, and urban/suburban lands. References include: the USDA NRCS Technical Guide and Appendix H from the Chesapeake Bay Program (contact Russ Mader at [mader.russ@epa.gov](mailto:mader.russ@epa.gov) or Kate Hopkins at [hopkins.kate@epa.gov](mailto:hopkins.kate@epa.gov)). Quality assurance program plans are available in each state office.

**Data Quality Reviews:** All data are reviewed and approved by the individual jurisdictions before input to the watershed model. Model results are also reviewed and approved before release to the web site. Processes are reviewed by the Tributary Strategy Workgroup of the Nutrient Subcommittee. The model itself is given a quarterly peer review by an outside independent group of experts.

No audits have been conducted by the Inspector General (IG) or evaluations by the General Accounting Office (GAO), OMB and National Academy of Public Administration (NAPA). No deficiencies identified in external reviews. Data are not identified as an "Agency-Level or Material Weakness" as a result of EPA decisions under the Federal Managers Financial Integrity Act.

**Data Limitations:** Data collected from voluntary collection programs are not included in the database, even though they may be valid and reliable. The only data submitted by state and local governments to our office are data that are required for reporting under the cost share and regulatory programs. State and local governments are aware that additional data collection efforts are being conducted by non-governmental organizations and that several entities are involved in using BMPs, however, they are done independently of the cost share programs and are therefore not reported.

**Error Estimate:** There may be errors of omission, mis-classification, incorrect georeferencing, mis-documentation or mistakes in the processing of data.

**New/Improved Data or Systems:** The next version of the watershed model is currently under development and will be completed in 2005. The new version(phase 5) will have increased spatial resolution and ability to model the effect of management practices. The phase 5

watershed model is a joint project with cooperating state and Federal agencies. Contact Gary Shenk [gshenk@chesapeakebay.net](mailto:gshenk@chesapeakebay.net) or see the web site at <http://www.chesapeakebay.net/phase5.htm>

**References:**

See <http://www.chesapeakebay.net/data/index.htm>, refer to CBP Watershed Model Scenario Output Database, Phase 4.3. Contact Kate Hopkins at [hopkins.kate@epa.gov](mailto:hopkins.kate@epa.gov) or Jeff Sweeney [jsweeney@chesapeakebay.net](mailto:jsweeney@chesapeakebay.net)

The nutrient and sediment loads delivered to the Bay indicator are published at <http://www.chesapeakebay.net/status.cfm?sid=186>. The nutrient and sediment loads delivered to the Bay data files used in the indicator are located at <http://www.chesapeakebay.net/pubs/statustrends/186-data-2003.xls>.

See “Chesapeake Bay Watershed Model Application and Calculation of Nutrient and Sediment Loadings, Appendix H: Tracking Best Management Practice Nutrient Reductions in the Chesapeake Bay Program, A Report of the Chesapeake Bay Program Modeling Subcommittee”, USEPA Chesapeake Bay Program Office, Annapolis, MD, August 1998, available at <http://www.chesapeakebay.net/pubs/777.pdf>

See USDA NRCS Field Office Technical Guide available at <http://www.nrcs.usda.gov/technical/efotg/>

**FY 2005 Performance Measure: Prevent water pollution and protect aquatic ecosystems so that overall aquatic system health of coastal waters of the Gulf of Mexico is improved on the “good/fair/poor” scale of the National Coastal Condition Report.**

**FY 2005 Performance Measure: Reduce releases of nutrients throughout the Mississippi River Basin to reduce the size of the hypoxic zone in the Gulf of Mexico.**

**Performance Database:** (1) Louisiana Coastal Hypoxia Shelfwide Survey metadata (data housed at National Oceanic and Atmospheric Administration/National Ocean Data Center, Silver Spring, Maryland). Funds for this research are provided by the National Oceanic and Atmospheric Administration, Coastal Ocean Program (NOAA/COP)  
(2) Southeast Area Monitoring and Assessment Program (SEAMAP) - Gulf surveys.

**Data Source:** (1) Hydrographic data are collected during annual surveys of the Louisiana continental shelf. Nutrient, pigment and station information data are also acquired. The physical, biological and chemical data collected are part of a long-term coastal Louisiana dataset. The goal is to understand physical and biological processes that contribute to the causes of hypoxia and use the data to support environmental models for use by resource managers.

(2) The Southeast Area Monitoring and Assessment Program (SEAMAP) is a state/Federal/university program for collection, management and dissemination of fishery-independent data and information in the southeastern United States

**Methods, Assumptions and Suitability:** (1) During the shelfwide cruise, data is collected along transects from the mouth of the Mississippi River to the Texas border. Information is collected on a wide range of parameters, including conductivity/temperature/depth (CTD), light penetration, dissolved oxygen, suspended solids, nutrients, phytoplankton, and chlorophyll. Hydrographic, chemical, and biological data from two transects of Terrebonne Bay on a monthly

basis, and bimonthly, off Atchafalaya Bay. There is a single moored instrument array in 20-m water depth in the core of the hypoxic zone that collects vertical conductivity/temperature data, as well as near-surface, mid, and near-bottom oxygen data; an upward directed Acoustic Doppler Current Profiler (ADCP) on the seabed measures direction and speed of currents from the seabed to the surface. There is also an assortment of nutrient and light meters.

Station depths range from 3.25 to 52.4 meters. **The objective is to delimit and describe the area of midsummer bottom dissolved oxygen less than 2 (mg. L).** Northern end stations of transects are chosen based on the survey vessel's minimum depth limits for each longitude.

Standard data collections include hydrographic profiles for temperature, salinity, dissolved oxygen, and optical properties. Water samples for chlorophyll *a* and phaeopigments, nutrients, salinity, suspended sediment, and phytoplankton community composition are collected from the surface, near-bottom, and variable middle depths.

Details of data collection and methodology are provided in referenced reports.

**QA/QC Procedures:** NOAA does not require written QA/QC procedures or Quality Management Plan; however, the procedures related to data collection are covered in the metadata files.

SEAMAP Data Management System (DMS) is based on information contained in the SEAMAP Gulf and South Atlantic DMS Requirements Document developed through a cooperative effort between National Marine Fisheries Service (NMFS) and other SEAMAP participants.

**Data Quality Reviews:** (1) Essential components of an environmental monitoring program in the Gulf of Mexico include efforts to document the temporal and spatial extent of shelf hypoxia, and to collect basic hydrographic, chemical and biological data related to the development of hypoxia over seasonal cycles. All data collection protocols and data are presented to and reviewed by the Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (the Task Force) in support of the adaptive management approach as outlined in the Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico (the Action Plan).

(2) Biological and environmental data from all SEAMAP-Gulf surveys are included in the SEAMAP Information System, managed in conjunction with National Marine Fisheries Service – Southeast Fisheries Science Center (NMFS-SEFSC). Raw data are edited by the collecting agency and verified by the SEAMAP Data Manager prior to entry into the system. Data from all SEAMAP-Gulf surveys during 1982-2002 have been entered into the system, and data from 2003 surveys are in the process of being verified, edited, and entered for storage and retrieval.

**Data Limitations:** Some existing monitoring for shelf-wide conditions are currently only performed each year primarily, but not exclusively, during July. Resources to conduct them limit the spatial boundaries of some of these existing monitoring efforts. Experience with the datasets has shown that when data are plotted or used in further analysis, outlying values may occasionally be discovered.

**Error Estimate:** (1) The manufacturers state +/- 0.2mg/L as the error allowance for both SeaBird and Hydrolab oxygen sensors.

**References:**

Mississippi River/Gulf of Mexico Watershed Nutrient Task force.2001. Action Plan for Reducing, Mitigating, and Controlling Hypoxia in the Northern Gulf of Mexico. Washington, DC.

Rabalais N.N., R.E. Turner, Dubravko Justic, Quay Dortch, and W.J. Wiseman. 1999. Characterization of Hypoxia. Topic 1 Report for the Integrated assessment on Hypoxia in the Gulf of Mexico. NOAA Coastal Ocean Program Decision Analysis Series No. 15. Silver Spring Maryland: National Oceanic and Atmospheric Administration.

Hendee, J.C. 1994. Data management for the nutrient enhanced coastal ocean productivity program. *Estuaries* 17:900-3

Rabalais, Nancy N., W.J. Wiseman Jr., R.E. Turner ; Comparison of continuous records of near-bottom dissolved oxygen from the hypoxia zone of Louisiana. *Estuaries* 19:386-407

SEAMAP Information System <http://www.gsmfc.org/sis.html>

**EFFICIENCY MEASURES/MEASUREMENT DEVELOPMENT PLANS**

***Wetlands***

The Agency is developing measures of wetland function. By 2006 and each year thereafter, EPA is committed to partnering with the Corps of Engineers (COE), states, and Tribes to obtain no net loss in wetland function based on quantifying functions gained and lost through mitigation for authorized wetlands impacts. Although there is not yet an annual measure for this target, by FY 2005 EPA will develop performance standards guidance on monitoring and adaptive management of mitigation sites, in conjunction with COE, U.S. Department of Agriculture (USDA), Department of Interior (DOI), and the National Oceanic and Atmospheric Administration (NOAA), and working with states and Tribes. In addition, by FY 2005, COE, EPA, USDA, DOI, and NOAA will establish a shared mitigation database. (A baseline is to be determined in FY 2006.) Since the effort is a joint undertaking of EPA and several other partners, progress could be affected by partner actions outside the control of EPA.

**COORDINATION WITH OTHER AGENCIES**

***National Estuary Program***

Effectively implementing successful comprehensive management plans for the estuaries in the NEP depends on the cooperation, involvement, and commitment of Federal and state agency partners that have some role in protecting and/or managing those estuaries. Common Federal partners include NOAA, the Fish and Wildlife Service, the Corps of Engineers, and

USDA. Other partners include State and local government agencies, universities, industry, NGOs, and members of the public.

### ***Wetlands***

Federal agencies share the goal of increasing wetlands functions and values, and implementing a fair and flexible approach to wetlands regulations.

### ***Great Lakes***

Pursuant to the mandate in Section 118 of the Clean Water Act to “coordinate action of the Agency with the actions of other Federal agencies and state and local authorities...” Great Lakes National Program Office (GLNPO) is engaged in extensive coordination efforts with state, Tribal, and other Federal agencies, as well as with our counterparts in Canada. EPA has joined with states, Tribes, and Federal agencies that have stewardship responsibilities for the Lakes in developing a new Great Lakes Strategy. In addition to the eight Great Lakes States and interested Tribes, partners include the Army Corps of Engineers (Corps), the Coast Guard, the Fish and Wildlife Service (USFWS), the U.S. Office of Geological Survey, the National Oceanic and Atmospheric Administration (NOAA), and the Natural Resources Conservation Service (NRCS). The Strategy joins environmental protection agencies with natural resource agencies in pursuit of common goals. These organizations meet semi-annually as the Great Lakes U.S. Policy Committee to strategically plan and prioritize environmental actions. GLNPO monitoring involves extensive coordination among these partners, both in terms of implementing the monitoring program, and in utilizing results from the monitoring to manage environmental programs. GLNPO’s sediments program works closely with the states and the Corps regarding dredging issues. Implementation of the Binational Toxics Strategy involves extensive coordination with Great Lakes States. GLNPO works closely with states, Tribes, FWS, and NRCS in addressing habitat issues in the Great Lakes. EPA also coordinates with these partners regarding development and implementation of Lakewide Management Plans for each of the Great Lakes and for Remedial Action Plans for the 31 U.S./binational Areas of Concern.

### ***Chesapeake Bay***

The Chesapeake Bay Program has a Federal Agencies Committee, chaired by EPA, which was formed in 1984 and has met regularly ever since. There are currently over 20 different Federal agencies actively involved with the Bay Program through the Federal Agencies Committee. The Federal agencies have worked together over the past decade to implement the commitments laid out in the 1994 *Agreement of Federal Agencies on Ecosystem Management in the Chesapeake Bay* and the 1998 *Federal Agencies Chesapeake Ecosystem Unified Plan (FACEUP)*. In the past two years, the Federal Agencies Committee has been focusing on how its members can help to achieve the 104 commitments contained in the *Chesapeake 2000* agreement adopted by the Chesapeake Bay Program in June 2000. Through this interagency partnership Federal agencies have contributed to some major successes, such as the U.S. Forest Service helping to meet the year 2010 goal to restore 2,010 miles of riparian forest buffers eight years early; the National Park Service leading the effort to restore over 500 miles of water trails three years early; and the U.S. Fish and Wildlife Service working to try to meet our fish passage goal of reopening 1,357 miles of currently blocked river habitat by 2003. Also in 2003, through the Federal Agencies Committee, the members will be looking at their agency budgets and other

programs to try to leverage maximum benefit to the state, private and Federal efforts protect and restore the Bay.

### ***Gulf of Mexico***

Key to the continued progress of the Gulf of Mexico Program is a broad multi-organizational Gulf states-led partnership comprised of regional; business and industry; agriculture; State and local government; citizens; environmental and fishery interests; and, numerous Federal departments and agencies. This Gulf partnership is comprised of members of the Gulf Program's Policy Review Board, subcommittees, and workgroups. Established in 1988, the Gulf of Mexico Program is designed to assist the Gulf states and stakeholders in developing a regional, ecosystem-based framework for restoring and protecting the Gulf of Mexico through coordinated Gulf-wide as well as priority area-specific efforts. The Gulf states strategically identify the key environmental issues and work at the regional, state, and local level to define, recommend, and voluntarily implement the supporting solutions. To achieve the Program's environmental objectives, the partnership must target specific Federal, state, local, and private programs, processes, and financial authorities in order to leverage the resources needed to support state and community actions.

### **STATUTORY AUTHORITIES**

1909 The Boundary Waters Treaty  
1978 Great Lakes Water Quality Agreement (GLWQA)  
1987 Great Lakes Water Quality Agreement  
1987 Montreal Protocol on Ozone Depleting Substances  
1990 Great Lakes Critical Programs Act  
1996 Habitat Agenda  
1997 Canada-U.S. Great Lakes Binational Toxics Strategy  
2002 Great Lakes and Lake Champlain Act  
Clean Water Act  
Coastal Wetlands Planning, Protection, and Restoration Act of 1990  
Estuaries and Clean Waters Act of 2000  
North American Wetlands Conservation Act  
US-Canada Agreements  
Water Resources Development Act (WRDA)

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### Healthy Communities and Ecosystems

**OBJECTIVE:** Enhance Science and Research

Through 2008, provide a sound scientific foundation for EPA's goal of protecting, sustaining, and restoring the health of people, communities, and ecosystems by conducting leading-edge research and developing a better understanding and characterization of environmental outcomes under Goal 4.

#### Resource Summary (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
<b>Enhance Science and Research</b>	<b>\$380,878.7</b>	<b>\$420,040.9</b>	<b>\$394,823.7</b>	<b>(\$25,217.2)</b>
Environmental Program & Management	\$52,443.0	\$61,444.1	\$62,016.9	\$572.8
Hazardous Substance Superfund	\$34,740.6	\$14,267.8	\$8,361.6	(\$5,906.2)
Science & Technology	\$286,526.2	\$336,318.6	\$316,109.2	(\$20,209.4)
Buildings and Facilities	\$5,525.0	\$5,680.5	\$6,131.7	\$451.2
Inspector General	\$1,643.9	\$2,329.9	\$2,204.3	(\$125.6)
Total Workyears	1,230.8	1,230.4	1,230.0	-0.4

#### Program Project (Dollars in Thousands)

	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	FY 2005 Req. v. FY 2004 Pres Bud
Research: Computational Toxicology	\$5,436.9	\$8,948.6	\$13,028.7	\$4,080.1
Research: Endocrine Disruptor	\$13,161.9	\$12,984.7	\$8,044.0	(\$4,940.7)
Research: Global Change	\$22,354.9	\$21,528.6	\$20,689.6	(\$839.0)
Research: Human Health and Ecosystems	\$163,550.7	\$190,730.8	\$177,407.5	(\$13,323.3)
Research: Pesticides and Toxics	\$32,664.7	\$36,784.8	\$29,017.7	(\$7,767.1)
Research: Fellowships	\$2,040.8	\$6,402.8	\$8,261.6	\$1,858.8
Congressionally Mandated Projects	\$13,669.8	\$0.0	\$0.0	\$0.0
Homeland Security: Preparedness, Response, and Recovery	\$30,959.2	\$28,999.9	\$22,751.7	(\$6,248.2)
Endocrine Disruptors	\$7,075.1	\$9,002.7	\$9,037.3	\$34.6
Science Policy and Biotechnology	\$850.2	\$1,603.8	\$1,707.2	\$103.4
Human Health Risk Assessment	\$27,536.0	\$36,495.0	\$36,832.2	\$337.2
Administrative Projects	\$61,578.5	\$66,559.2	\$68,046.2	\$1,487.0
<b>TOTAL</b>	<b>\$380,878.7</b>	<b>\$420,040.9</b>	<b>\$394,823.7</b>	<b>(\$25,217.2)</b>



## **FY 2005 Request**

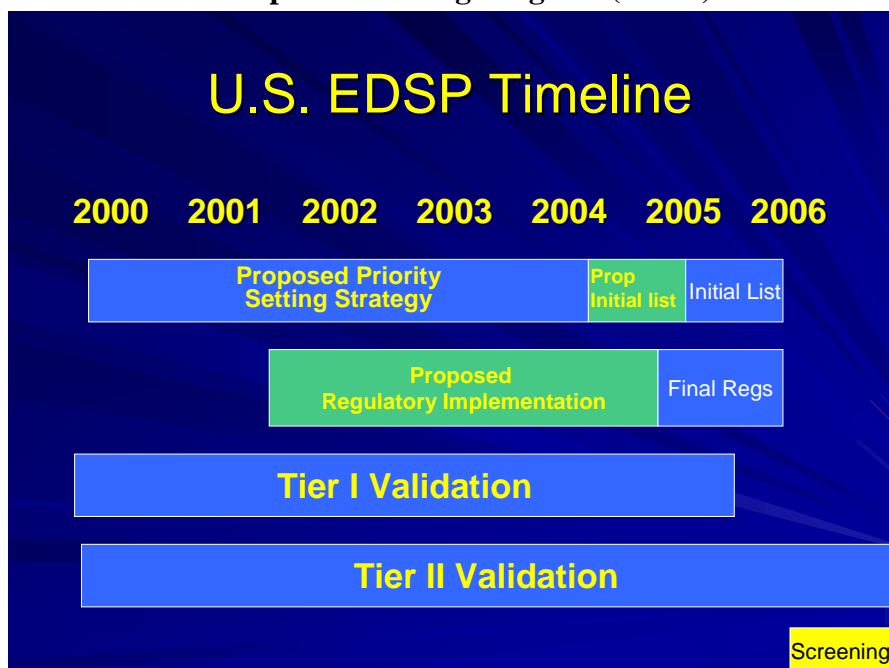
### ***Results to be Achieved under the Objective***

#### ***Endocrine Disruptors***

There is increasing evidence that fish and wildlife can be affected by chemicals that interfere with the endocrine system resulting in abnormal development, low fertility and greater susceptibility to disease. The link to human disease is less clear at ambient environmental levels. The Food Quality Protection Act of 1996 mandated that EPA test pesticides for estrogen-like effects on human health. The Safe Drinking Water Act Amendments of 1996 authorize EPA to similarly test contaminants found in drinking water sources to which a substantial population may be exposed. Given the scientific controversy over the testing of chemicals for their endocrine disrupting effects, the Agency established the Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) under the Federal Advisory Committee Act. EDSTAC included representatives from industry, environmental and public health groups, academia, and Federal and state government bodies.

On the basis of science, EDSTAC recommended that the screening program include commercial chemicals and contaminants; estrogen, androgen and thyroid endpoints; and wildlife as well as human health effects.

#### **Schedule for the Development and Implementation of the Endocrine Disruptor Screening Program (EDSP)**



Sorting and Priority Setting selects chemicals for screening using existing chemical data and screening tools. This will result in publication of an initial list of chemicals to be screened in Tier 1.

Regulatory Implementation involves the proposal and final adoption of regulations to implement EPA's statutory authority to require manufacturers of chemicals and registrants of pesticides to test chemicals.

Tier 1 Screens is a battery of in vitro and in vivo short-term screening assays that identify chemicals having the potential to interact with the estrogen, androgen and thyroid systems. Chemicals that screen positive in Tier 1 screening battery will be tested in Tier 2.

Tier 2 Tests consists of multi-generation tests in mammals, birds, fish, amphibians and invertebrates and will provide information on the adverse effects of the chemical as well as other information needed to assess the hazard to these organisms.

Screening of initial list chemicals starts testing chemicals from the sorting and priority setting stage using the validated Tier 1 assays.

EPA based its EDSP on the EDSTAC recommendations. The EDSP is a two-tiered program. Tier 1 is a battery of in vitro and in vivo short-term screening assays to identify chemicals that have the potential to interact with the estrogen, androgen, and thyroid systems. Chemicals demonstrating endocrine effects in the Tier 1 screening battery will be tested in Tier 2. Tier 2 consists of multi-generation tests in mammals, birds, fish, amphibians and invertebrates and will provide information on the adverse effects of the chemical as well as other information needed to assess the hazard to these organisms. FQPA mandated that all assays used in the EDSP be validated. Validation is a science-based process and has required application of cutting edge science, domestic, interagency and international cooperation, and ongoing stakeholder involvement.

The FQPA also mandated deadlines for the development and implementation of the EDSP. In 2001 the Natural Resources Defense Council and the EPA entered in to a Settlement Agreement in response to a suit brought by NRDC in which they alleged that EPA failed to meet the 1999 statutory deadline for program implementation. EPA agreed to make best efforts to validate the Tier 1 assays, publish the priority list and implement Tier 1 screening by December 2003. Under the terms of the Settlement Agreement, EPA must report to NRDC every six months when the agency anticipates missing the targets in the Settlement Agreement.

Currently, EPA expects to complete the validation of most of the Tier 1 screens and put into place the procedures needed to initiate endocrine screening of specific chemicals in 2005.

### ***Science Policy and Biotechnology***

Crops may be bioengineered to produce a class of pesticides, called plant-incorporated protectants (PIPs). These bioengineered crops are capable of producing PIPs for protection against pests, reducing or eliminating the use of chemical pesticide application on the plant. Such bioengineered crops are playing an ever-increasing role in the agricultural marketplace. The Federal government is committed to ensuring that bioengineered products, including those bioengineered to express PIPs, are safe for the public and environment alike. As with any new technology, there is lively public and scientific debate of the best ways to incorporate the products into the market and the possible long-term implications for agriculture. EPA, as part of the U.S. Federal government system of oversight, must keep abreast of new science and perform

its traditional role of evaluating potential risks to humans and the environment for products within its statutory purview.

The Plant-Incorporated Protectant (PIP) Rule, published in 2001, clarifies which genetically modified products are subject to review under FIFRA and FFDCA. The rule also reaffirmed the partnership between the USDA and EPA on regulation of bioengineered crop plants: the PIP (the pesticidal substances) are subject to EPA authorities, while the modified plant is regulated by USDA. Publication of the rule ensured that genetically engineered PIPs meet FIFRA and FFDCA safety standards. EPA evaluates PIPs in a scientifically rigorous manner taking into consideration any unique issues they present. Because pests can become resistant to pesticides, EPA also evaluates and addresses the potential for pests to become resistant to PIPs. EPA believes it is appropriate to evaluate and address this concern as PIPs generally are “reduced risk” pesticides. In general they affect only a very narrow range of targeted organisms, sparing other species that may be incidentally exposed to the PIP. Thus, PIPs are generally considered safer for humans and the environment than many of the toxic chemicals they replace. Should resistance to PIPs develop in pest populations, farmers may have to again rely on more toxic chemical insecticides. There are several new PIP products coming to the EPA for review for which decisions will likely be made in FY 2004 and 2005. EPA will also continue during this time frame to develop procedures and regulations specifically tailored to the characteristics of PIPs, improving EPA’s ability to reduce pesticide risks while at the same time streamlining procedures for developers/manufacturers.

The bioengineering of plants so that they resist harmful insects or pathogens is likely to attract continued public scrutiny, particularly on issues such as allergenicity and gene transfer. EPA will continue to seek technical information from scientific experts, and input from various stakeholders, on such issues.

EPA is committed to enhancing the quality of the science and research used to reach its environmental goals. The Agency will provide a sound scientific foundation for protecting, sustaining, and restoring the health of people, communities, and ecosystems by conducting leading-edge research and developing a better understanding and characterization of environmental outcomes. To meet its objective, EPA will conduct research in several important areas: 1) human health and ecosystems; 2) human health risks assessments; 3) climate change; 4) computational toxicology; 5) endocrine disruptors; and 6) pesticides and toxics.

The measurement-derived databases, models, and protocols developed through the integrated human health research program will strengthen the scientific foundation for human health risk assessment and provide the data, tools, and protocols needed for more reliable risk assessments, thereby improving the Agency’s ability to better understand and characterize environmental outcomes. Ecosystems protection research, which provides the scientific understanding to measure, model, maintain, and/or restore the integrity and sustainability of highly valued ecosystems, will focus on strengthening the scientific basis to adequately assess and compare risks to ecosystems, to protect and restore them, and to track progress in terms of ecological outcomes. In FY 2005, the Agency will enhance efforts to integrate different scales and types of monitoring to target effective water quality management actions and document the effectiveness of water quality management programs.

In coordination with the U.S. Climate Change Science Program (CCSP), EPA's Climate Change Research Program<sup>79</sup> provides the knowledge to allow policy makers to identify the most appropriate science-based solutions reducing potential risks to human health and ecosystems posed by climate change. The program focuses on assessing the potential consequences of climate change, including climate variability and land use changes, on air quality, water quality, ecosystem health, and human health. The Agency will also assess potential adaptation strategies for building resilience to climate change, while responding to both potential risks and opportunities.

Computational toxicology research will demonstrate how new scientific advances can be integrated in a way that allows for more efficient and more precise risk assessments, thereby optimizing the cost of EPA regulations, while protecting human and ecological health. In FY 2005, EPA will build on current efforts by accelerating the use of bioinformatics and other computational approaches and applying the program to address other high-priority regulatory issues.

EPA will continue to develop and evaluate innovative state-of-the-art testing methods for assessing potential human health risks of endocrine disrupting chemicals (EDCs). These methods will involve molecular and computational tools that can be used to prioritize chemicals for screening and testing.

The Agency's fellowship programs will continue to attract the brightest and most dedicated students in the Nation for training in scientific and engineering disciplines critical to the protection of public health and the environment.

EPA's multidisciplinary research program to examine risks resulting from exposure to pesticides and toxics focuses on meeting the requirements of the Food Quality Protection Act (FQPA). By 2008, EPA will provide scientific tools that can be used to characterize, assess, and manage risks associated with the implementation of FQPA. Additional research on pesticides and toxics will support the implementation of the Federal Insecticide, Fungicide, and Rodenticide Act and the Toxic Substances Control Act by developing methods and models to obtain toxicity data and assess and manage risks to toxic agents.

EPA's Homeland Security research program is committed to providing sound science and conducting leading edge research to help reduce the impacts of terror attacks. This includes developing enhanced methods for detecting, containing, and decontaminating biological and chemical agents intentionally introduced drinking water and wastewater systems. EPA will also develop methods for safe disposal of waste materials resulting from cleanups, and methods for conducting rapid assessments of risks to emergency response personnel and the public from potential homeland security threats. These efforts will provide elected officials, decision makers, the public, and first responders with rapid risk assessment protocols to quickly assess the risk to human health and the environment from chemical and biological threats. They will also result in more efficient and effective cleanup of water systems, and disposal of contaminants resulting from terror attacks.

---

<sup>79</sup> For more information about EPA's Climate Change Research, see <http://cfpub.epa.gov/gcrp/>

## ***Research: Human Health and Ecosystems Protection***

EPA's mission is to protect public health and the natural environment. To fulfill this dual charge and balance environmental sustainability with the growth of human activity, the Agency conducts core human health and ecosystems research to 1) identify and characterize, through the process of human health risk assessment, environmentally-related human health problems, and 2) understand the condition of ecosystems, the stressors changing that condition, the consequences of those changes, and the consequences of preventing, mitigating, or adapting to those changes. As a result, this research has become integral to environmental decision-making within the Agency. Emanating from these two broad areas of research are more targeted efforts, including, but not limited to, mercury research and research for the Report on the Environment that are critical to the fulfillment of the EPA's mission.

The Agency's human health research program has five primary areas of focus: 1) harmonization of cancer and non-cancer risk assessment; 2) aggregate risk assessment; 3) cumulative risk assessment; 4) susceptible and highly exposed life stages and subpopulations; and 5) Evaluating the Effectiveness of Public Health Outcomes. EPA's ecological research program also has four primary areas of emphasis: 1) ecological condition; 2) ecological diagnosis; 3) ecological forecasting; and 4) ecological restoration. Following are more in-depth discussions of EPA's human health and ecosystems research efforts for FY 2005.

Human Health Research: There are many uncertainties associated with the risk assessment process because of severe limitations in available data on the complex interactions between the sources and environmental concentrations of contaminants, human exposures to these contaminants, and relationships between human exposure, dose, and response. These uncertainties frequently result in the use of default assumptions and uncertainty factors in human health risk assessments. EPA's human health research, guided by the *Human Health Research Strategy*,<sup>80</sup> represents the Agency's only comprehensive program to address these data limitations and reduce reliance on default assumptions.

Human health research is one of the highest priorities for many Agency program offices, the Regions, and the states. For example, in order to more effectively implement the requirements of FIFRA, TSCA, and FQPA, EPA's Office of Prevention, Pesticides and Toxic Substances (OPPTS) needs research to provide a scientific basis for the use of mechanistic data in harmonized risk assessment, methods and tools for aggregate and cumulative risk, and research on children and the elderly as susceptible subpopulations. EPA's Office of Air and Radiation (OAR) utilizes research on methods and models for aggregate and cumulative risk to more effectively evaluate risk associated with exposures to particulate matter and various air toxics, and asthma in children, to carry out its mandates under the Clean Air Act (CAA).

The Office of Water (OW), in addressing the requirements of the CWA and SDWA, requires a sound scientific basis for the use of mechanistic data in harmonized risk assessment and methods to assess cumulative risks from exposure to multiple chemicals in drinking water. Regions and other regulatory program offices have comparable needs for sound science to carry out their legislative mandates. This research also supports the Human Health Risk Assessments Program/Project described later in this chapter.

---

<sup>80</sup> U.S. EPA, Office of Research and Development. *Human Health Research Strategy*. (EPA/600/R-02/050) Washington, D.C.: U.S. Government Printing Office. (2003)

Human health research is conducted by EPA researchers, and through contracts and assistance agreements (i.e., grants and cooperative agreements). Products resulting from this research are subjected to quality assurance (QA) procedures. Research supported under the Science to Achieve Results (STAR)<sup>81</sup> program is selected for funding through a rigorous competitive external peer review process designed to ensure that only the highest quality efforts receive funding support. (Criteria: Quality)

This research program is supported by multiple long-range research planning documents, including: 1) the Human Health Research Strategy; 2) the Research Strategy on Environmental Risks to Children;<sup>82</sup> 3) the Asthma Research Strategy;<sup>83</sup> and 4) the Multi-Year Plan for Human Health Research.<sup>84</sup> These long-term strategies and planning documents guide research to improve the scientific basis to identify, characterize, assess, and manage environmental exposures that pose the greatest health risks to the American public, and identify clear goals and priorities for the program. These documents also support performance planning and evaluation as required by the Government Performance and Results Act (GPRA).

Human health research addresses critical issues along five major themes: 1) harmonization of cancer and non-cancer risk assessment; 2) aggregate risk assessment; 3) cumulative risk assessment; 4) susceptible and highly-exposed life stages and subpopulations; and 5) evaluating the effectiveness of public health outcomes.

Harmonization of cancer and non-cancer risk assessment: EPA's research on harmonization of risk assessment approaches is designed to develop a consistent, flexible set of principles for using and drawing inferences from available information on mode or mechanism of action to support risk assessment. Such a framework should be responsive to differences that exist among various modes or mechanisms of toxicity and the amount of relevant toxicity data available. In FY 2005, research activities will develop 1) genomic/proteomic approaches that could be combined with emerging computer approaches for EPA's Computational Toxicology program; 2) DNA microarray techniques to provide mechanistic data on high priority environmental chemicals; 3) a scientific database that will serve as a framework for the consistent use of mechanistic data in cancer and non-cancer risk assessments; and 4) workshops to integrate information from grants-supported research and mechanistic work performed by EPA. Research will also support development of biologically-based markers of toxicity for high priority chemicals. Research results will be provided to the EPA scientific community so they will have mechanistically-based markers that can be used in a consistent manner for cancer and non-cancer risks assessment.

Aggregate Risk Assessment: EPA's research program on aggregate risk (i.e., sum of exposures to a single chemical or toxicant from multiple sources, and multiple routes and pathways of exposure) is designed to provide improved tools (methods, models, data, and guidance) for assessing human health risk so that the Agency can protect the health of the public and environment more effectively.

---

<sup>81</sup> For more information about EPA's Science To Achieve Results Program, see <http://es.epa.gov/ncer>

<sup>82</sup> U.S. EPA, Office of Research and Development. *Strategy for Research on Environmental Risks to Children*. (EPA/600/R-00/068) Washington, D.C.: U.S. Government Printing Office. (2000)

<sup>83</sup> U.S. EPA, Office of Research and Development. *Asthma Research Strategy*. (EPA/600/R-01/061) Washington, D.C.: U.S. Government Printing Office. (2002)

<sup>84</sup> U.S. EPA, Office of Research and Development. *Human Health Research Multi Year Plan*. Washington, D.C.: EPA. Accessed January 14, 2003. Available only on the internet at: [www.epa.gov/osp](http://www.epa.gov/osp)

In FY 2005, EPA will continue to generate exposure measurement and exposure factor data and innovative methods to support the development, evaluation, and enhancement of models of aggregate exposures, dose, and effects. This research seeks to understand the key determinants of exposure and risk, improving exposure measurement techniques, and develop critical data on exposure and exposure factors. The results of this research will be used to fill data gaps and reduce reliance on numerous default assumptions that are currently used in the risk assessment process, which will strengthen the scientific foundation for human health risk assessment.

Cumulative Risk Assessment: Through its base program and the FY 2003 Cumulative Risk Research Initiative, EPA will provide regulatory decision-makers with models, risk assessment approaches, and guidance that will be used for conducting assessments for cumulative exposure and risks to pollutants that pose the greatest health risks to the American public. This research is intended to describe how multiple chemicals or other stressors may work together to produce an adverse effect when accumulated over multiple pathways and routes of exposure, and over time. Cumulative risk research will support the Risk Assessment Forum's effort to develop Agency guidelines for cumulative risk assessment.

Activities for FY 2005 and beyond include: 1) developing and refining physiologically-based pharmacokinetic (PBPK) models for using exposure, biomarker and PK data in risk assessments; 2) examining promising new biomarkers of exposure and effects that can be used in future exposure and epidemiological studies, such as the National Children's Study (NCS); and 3) sponsoring research that will provide a framework for structuring evaluations of the toxicity of complex chemical mixtures for use in human and environmental health assessments.

Susceptible and Highly-Exposed Life Stages and Subpopulations: EPA is committed to obtaining data and developing and verifying innovative methods and models to support assessment of the susceptibilities of sub-populations to environmental agents.

The Agency's long-term goal in this area is to demonstrate why some groups of people, defined by life stage, genetic factors, and health status, are more vulnerable than others to adverse effects from exposure to environmental agents. The Agency's core research program on the vulnerabilities associated with children's age and developmental life stages was expanded through initiatives in 1998 and 2000 on children's environmental health. In the FY 2004 President's Budget, EPA launched its National Aging Initiative with the purpose of examining and prioritizing environmental health threats to older persons. This research produces the fundamental tools that are then used to support the FQPA and the Safe Drinking Water Act (SDWA), which require that the Agency consider children and other potentially susceptible groups when setting health-based standards.

In FY 2005, research on susceptible subpopulations will continue to provide the scientific support for conducting risk assessments that consider the vulnerabilities of susceptible and highly exposed life stages and subpopulations. This research will focus on developing a scientific understanding of the reasons for differences in exposure and response of selected groups, by age and developmental stage, within the general population. The research is organized into three broad science themes: life stage, genetic background, and health status.

Important research efforts for FY 2005 include:

- evaluate community-based approaches to risk reduction that are being tested in the Children's Centers of Excellence in Environmental Health and Disease Prevention;
- provide validated tools for characterizing real world risks to young children and adolescents participating in the National Children's Study;
- identify modes of action by which specific groups of chemicals/pesticides increase cancer or non-cancer health risks as a function of life stage;
- develop the necessary tools and models to characterize and conduct field studies on exposures to high-priority environmental chemicals in the elderly;
- examine effect of pre-existing respiratory disease (e.g., asthma, bronchitis) on response to air pollutants;
- develop the necessary tools and models to characterize and conduct field studies on exposures to high-priority environmental chemicals in adolescents.

EPA will also continue targeted studies focusing on children's health. Research will examine children's aggregate and cumulative exposure research results from the past five years (FY 2000-05) and will statistically analyze this data in support of the above referenced FY 2006 FQPA mandate. Remaining critical children's aggregate exposure issues will also be identified, and targeted research studies will be conducted through FY 2007 to address these issues and generate the critical exposure and exposure factor data needed to reduce risk assessors' reliance on default assumptions. Finally, EPA is working with OPPTS and OAR under the "Buy Clean" program to provide guidance to school systems and other interested stakeholders on emissions from products used in schools.

Evaluating the Effectiveness of Public Health Outcomes: In FY 2005, EPA will continue its efforts to evaluate the effectiveness of risk management options in producing positive public health outcomes. This research will provide the scientific understanding and tools to develop a framework to assist the Agency and partners in evaluating the effectiveness of risk management options in terms of public health outcomes. Much of the work will consist of an integrated effort to build collaborations with and linkages to other Federal agencies, such as the Centers for Disease Control and Prevention (CDC) and the National Institute of Environmental Health Sciences (NIEHS), to identify data bases and indicators that can be used to assess environmental decisions in public health terms. This research will provide crucial information for the Agency's Report on the Environment.

Ecosystem Research: The nation's ecosystems provide valuable services to the public, such as air and water purification, flood control, food, and raw materials for industrial processes, as well as multiple recreational benefits. Many human activities alter or damage ecosystems and their ability to provide these goods and services. To balance environmental sustainability with the growth of human activity, it is important to understand the condition of ecosystems, the stressors changing that condition, the consequences of those changes, and the consequences of preventing, mitigating, or adapting to those changes. EPA's ecological research program addresses these concerns, and has four primary areas of emphasis: 1) ecological condition; 2) ecological diagnosis; 3) ecological forecasting and 4) ecological restoration.

EPA's Ecological Research program was evaluated for the FY 2005 President's Budget using the Administration's Program Assessment Rating Tool (PART). The Agency is committed



to addressing the findings in the PART, such as developing long-term outcome-oriented and annual performance measures, and annual efficiency measures.

Ecological Condition Research: EPA's ecological condition research efforts consist, in large part, of the various components of the Environmental Monitoring and Assessment Program (EMAP), which focuses on monitoring science required to develop EPA's capability to measure trends in freshwater and marine ecosystem health. The EMAP research efforts are guided by the EMAP Research Strategy, published in 2002.<sup>85</sup> Major efforts under EMAP include the National Coastal Assessment (NCA), Western EMAP, the Central Basin Integrated Assessment, work in landscape ecology, and programs to develop and refine environmental indicators.

Under the National Coastal Assessment program, EPA is partnering with 24 marine coastal states and Puerto Rico, the U.S. Geological Survey (USGS), and the National Oceanic and Atmospheric Administration (NOAA) to conduct sampling of estuaries using probabilistic methods. As a result of this effort, the condition of near-shore coastal environments in the Western continental U.S. is being assessed. This effort will continue in FY 2005 to complement EPA's ongoing work to improve beach monitoring in support of the Clean Water Act (sections 403(c), 301(h), and 316 (a) and (b)). As EPA completes the initial phase of the NCA, the Agency will have sufficient information on selected estuaries to begin examining changes and, subsequently, trends in condition. In 2008, there will be sufficient data on estuaries sampled in the earlier years of EMAP to evaluate the power of the survey design for these systems to detect changes in condition and trends. Preliminary data will be reported in the FY 2005 National Estuarine Program report.

The Western EMAP (a.k.a. Western Pilot) study will continue as a primary activity of EPA's monitoring research. This study has four areas of emphasis: 1) the landscape atlas for western states; 2) intensive study of three watersheds (Columbia River basin, Missouri River basin, and San Francisco Bay region); 3) Pacific coast monitoring; and 4) a western-wide stream survey. The results from the Western Pilot, National Coastal Assessment and FY 2005 wetlands reporting efforts will be used to guide the development of monitoring frameworks for other aquatic ecosystems.<sup>86</sup> These programs will provide water resources managers with the tools necessary to identify status and trends in the condition of the nation's streams and estuaries and to assess the impacts of management decisions. These projects will also support development of a framework of science and technology for sustainability, addressing issues of geographic and temporal scale, stocks and flows of materials, system vulnerability and resilience, and the role of information.

EPA is also refining and extending the EMAP approach of working in partnership with states and tribes to determine the condition of their surface waters, including large rivers in the Mississippi River Basin (the Central Basin). Rivers of the Central Basin are challenged by long-term loadings of nutrients, sediments, and toxic chemicals as well as extensive habitat alterations. The resulting inputs to the Gulf of Mexico are a significant contributor to causes of hypoxia, loss of wildlife habitat, and water quality concerns. In addition, there are important

---

<sup>85</sup> U.S. EPA, Office of Research and Development. *Environmental Monitoring Assessment Program: Research Strategy*. Washington, D.C.: U.S. Government Printing Office. EPA 620-R-02-002. (2002). Available through the internet: <http://www.epa.gov/emap/html/pubs/docs/resdocs/resstrat02.html>

<sup>86</sup> U.S. EPA, Office of Research and Development, Office of Water. *National Coastal Condition Report*. Washington, D.C.: U.S. Government Printing Office. EPA 620-R-01-005. (2001). Available through the internet: <http://www.epa.gov/owow/oceans/nccr/chapters/cwapcover.pdf>

scientific linkages between the Central Basin research and proposed watershed mitigation and management efforts. The health of these large rivers is linked to the conditions of small streams, and ultimately their watersheds. Determining the condition of large rivers and understanding the processes occurring in the watersheds will be important for diagnosing the causes of impaired conditions in these river systems. In FY 2005, research will continue to develop a sampling and analysis design to monitor ecological condition of the Missouri, upper Mississippi, and Ohio Rivers.

Research in FY 2005 will also provide technical guidance for implementing and evaluating projects to restore riparian zones, which are critical, landscape components for the restoration of aquatic ecosystems and water quality. Landscape ecology research in FY 2005 will continue to focus on improving estimates on the effects of land-based stressors on aquatic, estuarine, wetland, terrestrial, and landscape conditions. This work extends the EMAP probability sampling design to estimate conditions of ecological resources across the West through the application of spatially-distributed models. Landscape characterization research includes: 1) planning and generating land characteristic databases for determining current conditions and (change land cover and other spatial databases); 2) continuing remote sensing research and developing high resolution imagery applications to document changes in land cover over time; and 3) quantifying relationships between landscape metrics and specific parameters. This research will significantly improve EPA's ecological monitoring and assessments, as well as risk management decisions, and will reduce uncertainty in other high priority research programs. The Landscape Sciences Program is contributing a national assessment of riparian habitat conditions to the Committee on Environment and Natural Resources' (CENR) National Environmental Report. This report will fit into the framework for conducting a national landscape assessment by the year 2008.

Environmental indicators research in FY 2005 will continue to focus on: 1) the development of the next generation of biological indicators to characterize ecosystem condition and diagnose exposure to specific stressors; 2) the application of these indicators to the monitoring of aquatic ecosystems; and 3) the interpretation of the indicators in ecological risk assessments. Ecological indicators, including genetic and landscape, will be developed and evaluated using EPA's Indicator Guidelines.<sup>87</sup> Also, prototype indicators of condition for deep river fish and population genetics data will be developed, which are unique to ecological integrity studies. This will provide inherent measures of population fitness and sustainability, which can be associated with historic or anthropogenic stresses.

Products of EMAP research conducted by EPA researchers, and through contracts and cooperative agreements are subjected to quality assurance (QA) procedures. EMAP has had more than 25 separate peer reviews of individual program components (over the last 10 years). The EPA Science Advisory Board has also reviewed several aspects of EMAP, paying particular attention to the development of indicators and the integration and assessment activities within the program. (Criteria: Quality)

By integrating EMAP activities described herein with the monitoring and research activities of other agencies, specifically through the efforts of the twelve federal partners that comprise the National Environmental Monitoring Initiative, EPA can begin to assess the status of

---

<sup>87</sup> U.S. EPA, Office of Research and Development. *Evaluation Guidelines For Ecological Indicators*. Washington, D.C.: U.S. Government Printing Office. EPA 620-R-99-005. (2000)

resources and their multiple uses in the context of entire ecosystems. A fully integrated and coordinated network can provide a better understanding of our environmental resources and produce greater cost-effectiveness, while continuing to meet individual agency missions.

(Criteria: Relevance)

A major component of this research is the development of techniques for the assessment of condition at regional scales. Progress is evident in the successful application of these techniques in the Mid-Atlantic and adoption by states, and in current work on the National Coastal Assessment (NCA) and the Western Pilot. In the Mid-Atlantic, for example, a decade of work has produced such landmark reports as an Ecological Assessment of the United States Mid-Atlantic Region: A Landscape Atlas,<sup>88</sup> The Condition of the Mid-Atlantic Estuaries,<sup>89</sup> From the Mountains to the Sea; the State of Maryland's Freshwater Streams,<sup>90</sup> and Mid-Atlantic Highlands Stream Assessment.<sup>91</sup> Research in this area will focus on a region-wide ecological assessment of the Mid-Atlantic in cooperation with Region 3. The National Coastal Condition Report provides an assessment of historical conditions of many of the nation's estuaries and is an important baseline for the NCA Program. (Criteria: Performance)

Ecological Diagnosis Research: Diagnosis research (i.e., process and modeling) addresses biological, chemical, and physical processes affecting the condition of ecosystems and their responses to stressors. This research allows for predictions of future landscapes, stressor patterns, ambient conditions, and receptor responses. Predicting the impact of changes in conditions enables resource managers to address problems in ways that will more effectively achieve their environmental protection goals. By providing a better understanding of risks to ecosystem resources, processes, and services supporting human health and welfare, this research will help provide better and more ecologically sustainable choices by environmental decision makers.

Since measurements are not feasible in every watershed because of cost and other practical constraints, landscape indicators offer an efficient means to detect change, measure watershed level stressors, and quantify relationships between landscape metrics and specific parameters. A new generation of wall-to-wall spatial data (e.g., Multi-Resolution Landscape Characterization land cover data and North American Landscape Characterization historical landscape data), and advances in geographic information systems (GIS) make it possible for local, state, and Federal managers to diagnose causes and forecast future conditions to protect and restore valued ecosystems more effectively. Diagnosis and forecasting models developed in this objective are being successfully applied to provide a better scientific basis for ecosystem protection and restoration, and provide important support for a number of programs (e.g., nitrogen and mercury control, Total Maximum Daily Load (TMDL), pesticide registration, and Hazardous Waste Identification Rule (HWIR)).

---

<sup>88</sup> U.S. EPA, Office of Research and Development. *An Ecological Assessment of the United States Mid-Atlantic Region: A Landscape Atlas*. Washington, D.C.: U.S. Government Printing Office. EPA/600/R-97/130. (1997).

<sup>89</sup> U.S. EPA, Office of Research and Development. *The Condition of the Mid-Atlantic Estuaries*. Washington, D.C.: U.S. Government Printing Office. EPA/600/R-98/147. (1998).

<sup>90</sup> U.S. EPA, Office of Research and Development. *From the Mountains to the Sea, The State of Maryland's Freshwater Streams*. Washington, D.C.: U.S. Government Printing Office. EPA/903/R-99/023. (1999).

<sup>91</sup> U.S. EPA, Region 3. *Mid-Atlantic Highlands Stream Assessment*. EPA/903/R/00/015. (2000). Available through the internet: <http://www.epa.gov/maia/pdf/MAHASStreams.pdf>

EPA will also continue to conduct research to address the effects of excess nitrogen from atmospheric or other sources and aquatic ecosystems in FY 2005, including the development of models that predict the loading-response relationships for nitrogen in aquatic habitats and improved knowledge of the biogeochemical processes controlling nutrient processes in watersheds. Such models can be used for stressor source apportionment and for the assessment of management and mitigation strategies. In addition, deposition of nitrogen, along with other atmospheric stressors such as sulfur, will be monitored throughout the northeastern U.S. to continue to evaluate the effectiveness of existing regulations on control of the major constituents of acid rain and the recovery of impacted streams, rivers, and lakes. Additional research in FY 2005 will include investigation into the fate, behavior, and effects of natural organic nitrogen and controls on the mobility and availability of phosphorous.

Other ecological process and modeling research will continue to develop approaches for evaluating relative risks from chemical and non-chemical stressors on fish and wildlife populations across large areas or regions. Research in this area will improve the ability to perform retrospective (diagnostic) and prospective (forecasting) assessments of risks to animal and plant life as determined by the spatial distribution of habitat quality and stressors (e.g., toxic chemicals, nutrients, disease, and invasive species) in the landscape. Research results will be used to describe habitat requirements for wildlife and to manage watersheds to achieve and maintain desired ecological conditions, using biological indicators and metrics to determine the condition of aquatic ecosystems. Research in FY 2005 involves improving the environmental manager's ability to implement new, more efficient methods for stressor identification and characterization. A report will be produced on the development of molecular indicators of exposure to detect biologically relevant exposures to invertebrate organisms. Also, the level 1 Causal Analysis and Diagnosis Decision Information System (CADDIS) will continue to be utilized in these efforts.<sup>92</sup> This research supports the Administration's priority for Networking and Information Technology Research and Development.

Ecological Forecasting Research: EPA's ecological forecasting research (i.e., risk assessment) addresses the risk posed to ecosystems by stressors, alone and in combination, now and in the future. Ecological assessments will link stressors with consequences and evaluate the potential for damage to particular ecosystems, and will be used to compare the relative risks associated with different stressors, regional areas, and ecosystems. This research develops tools to enable environmental risk managers at local, state, and Federal levels to identify priority sensitive ecosystems.

The Regional Vulnerability Assessment (ReVA) project, begun in FY 2000, will continue to combine modeled projections of changes in stressors (e.g., pollution deposition, land use change) with information on sensitive ecosystems in order to identify: 1) the greatest environmental risks likely to arise in the next 5-25 years, and 2) where those risks are likely to occur. The ReVA project continues to show that invasive species are major stressors on ecological resources and will pose significant threats in the future. Successful rapid response requires both early detection of new invaders and a prediction of their spread based on patterns of invasion (e.g., shipping) and the inherent vulnerability of different ecosystems to invasion. To date, monitoring for water quality (e.g., 305b Clean Water Act), early detection of invasive species, predicting the spread of invasive species, and predicting the vulnerability of ecosystems

---

<sup>92</sup> U.S. EPA, Office of Research and Development. Summary Report for the Workshop on the Causal Analysis and Diagnosis Decision Information System (CADDIS). Washington, D.C.: U.S. Government Printing Office. EPA/600/R/02/078. (2002).

to invasions have largely been independent activities. The overall goal of this research is to develop integrated methods of detecting and predicting the spread of new invasive species introduced into the Great Lakes. Achieving this goal will require coordination among researchers in several different fields, as well as Federal, state, and local regulatory agencies, and NGOs.

Ecological Restoration Research: In FY 2005, EPA will continue to focus on the options available to manage the risks to, and restoration of, degraded ecosystems. The growth rate of the man-made environment necessitates development of cost-effective prevention, control, and remediation approaches for sources of stressors and adaptation approaches for ecosystems. These technologies will diagnose ecosystem restoration needs, evaluate progress toward restoration, and establish ecologically relevant goals and decision support systems for state and community planners. EPA is developing integrated restoration technologies which focus on: 1) rehabilitating, to the extent possible, the structure of watershed ecosystems (e.g., restoring riparian zones); 2) reducing perceived stressors (e.g., cleaning up contaminated sediments); and 3) enhancing the natural resilience of the system. EPA is also developing tools to assess the progress, effectiveness, and cost of candidate restoration technologies, including the development of methods for evaluating negative or unexpected impacts of the restoration technology. Utilizing this research, local, state and Federal managers will protect and restore aquatic ecosystems using scientifically defensible methods. This research will be incorporated into restoration protocols to allow more uniform approaches to determining effectiveness and cost, which will relate to potential results in public benefits. (Criteria: Relevance)

Mercury Research: Mercury is released from a variety of sources, exhibits a complicated chemistry, and proceeds via several different pathways to humans and wildlife. After release, mercury undergoes complicated transformations that can result in highly toxic methylmercury, an organic form of mercury that bioaccumulates in fish and animal tissue. Methylmercury is a persistent compound posing risks of neurological and reproductive problems for human and wildlife, and therefore is a pollutant of considerable concern.

The 1997 Mercury Study Report to Congress<sup>93</sup> described the magnitude of mercury emissions in the United States, identified mercury emission sources, and assessed the health and environmental implications of those emissions. In the report, EPA concluded that a plausible link exists between human activities that release mercury from industrial and combustion sources in the United States and methylmercury concentrations in humans and wildlife. While power generation facilities collectively are the largest remaining source of mercury emissions to the atmosphere, there are great uncertainties associated with understanding the fate and transport of atmospheric mercury and how to most efficiently manage this pollutant while simultaneously meeting significant reduction targets for other pollutants.

EPA has developed a Mercury Research Multi Year Plan (MYP)<sup>94</sup>, which identifies research efforts to be conducted over an eight-year time frame and addresses the elements of

---

<sup>93</sup> U.S. EPA, *Mercury Study Report to Congress Volume I- VIII*. (EPA-45/R-97-003 through EPA-452/R-97-010). Washington D.C.: U.S. Government Printing Office. (1997) Available: <http://www.epa.gov/oar/mercury.html>

<sup>94</sup> U.S. EPA, Office of Research and Development. *Mercury Research Multi-Year Plan*. Washington DC:EPA. Accessed January 14, 2004. Available only on the internet at: [www.epa.gov/osp/myp](http://www.epa.gov/osp/myp).

the Agency's externally peer-reviewed Mercury Research Strategy<sup>95</sup>. The MYP reflects the Agency's research needs concerning mercury sources, control and treatment, environmental fate and behavior, impacts on ecological resources, and potential effects on human health. The research strategy and MYP for mercury reflect EPA's ongoing commitment to design and conduct relevant research that includes providing results reflective of clear goals and priorities developed with input from customers. (Criteria: Relevance)

The Mercury MYP has two long-term goals: 1) reduce and prevent release of mercury into the environment and 2) understand the transport and fate of mercury from release to the receptor and its effects on the receptor. The major emphasis of the mercury research program is the control of utility emissions, because utilities represent the most significant source (in regards to magnitude) of mercury release to the atmosphere in the United States. Controlling and reducing these emissions requires risk management tools, including the development of technical information and data on the cost and performance of control options (e.g., flue gas treatment).

Research efforts in FY 2005 will continue the Agency's FY 2004 Clear Skies Research Initiative to identify where emerging control technologies and continuous measurement of mercury combustion sources can facilitate or optimize mercury emissions reduction. In addition, work will continue as part of this initiative to develop a method to measure dry deposition of mercury to support future deployment in routine networks to assess the impact of emissions reductions over time. This research will also support the recent Utility Mercury Reductions proposal signed by Administrator Leavitt on December 15, 2003. This proposal will control emissions of mercury and other hazardous air pollutants from power plants through emissions trading and would cap power plant mercury emissions at 15 tons in 2018, down from 48 tons in 1999.

Other important research efforts include characterizing mercury effects on ecological receptors. The presence of mercury in freshwater fish, particularly predator fish higher in the food chain, is the most frequent basis for state fish advisories. Human health assessments are planned that will provide answers to some of the questions that were raised while setting and evaluating the current reference dose (RfD) for methylmercury<sup>96</sup>. These assessments will address the relationship between maternal and cord blood levels of mercury and explore the potential adverse effects of methylmercury on cardiovascular function. This work will serve as background and prepare the Agency for a reevaluation of the RfD for methylmercury in FY 2009. Other Agency priorities and regulatory issues that will directly benefit from mercury research over the next five to ten years include: MACT rules for chlorine production, municipal solid waste landfills, and commercial boilers; the Urban Air Toxics strategy; wildlife water quality criterion; Total Maximum Daily Load (TMDL) development; and revised Land Disposal Restrictions (LDRs) for mercury-bearing hazardous wastes.

Report on the Environment (ROE): This work strategically moves EPA beyond its historic reliance on indicators of reduction in exposures (e.g., decreased air, water, or blood and urine concentrations; decreased emissions/discharges; increased facilities in compliance) to more direct outcome measures (e.g., improved ecological conditions, reduced illness and disease).

---

<sup>95</sup> U.S. EPA, Office of Research and Development. *Mercury Research Strategy* (EPA/600/R-0/073) Washington D.C.: U.S. Government Printing Office. (2000)

<sup>96</sup> National Research Council (NRC). *Toxicological Effects of Methyl mercury*. Washington D.C: National Academy Press. (2000)

The Agency is committed to the identification, development, and application of a new generation of indicators that will extend EPA's ability to assess environmental progress. Indicator research played a pivotal role in the formulation and preparation of the first EPA ROE. In FY 2005, EPA will continue to revise and update the technical report on the state of environmental indicators, which will provide the scientific basis for the FY 2005 report. The Ecological Research MYP includes information on goals, priorities, and schedules related to the ROE Report. (Criteria: Relevance & Performance)

Exploratory Grants Research: In FY 2005, the Exploratory Grants research program will announce an annual solicitation for research proposals in areas where significant gaps in scientific knowledge and understanding exist. This program provides opportunities for individual investigators from the academic research community to conceive, define, and propose research projects. This program supports open, investigator-initiated projects that apply novel and highly innovative approaches to address environmental issues. It is EPA's longest established program devoted to addressing emerging environmental issues in a substantive way. Panels of external researchers competitively review the proposals, with only the most scientifically sound proposals ultimately receiving support. (Criteria: Quality & Relevance)

In April of 2003, the National Research Council of the National Academy of Sciences (NAS) issued a report on EPA's Science To Achieve Results (STAR) program, which indicated, "The committee encourages the STAR program to continue funding research that explores future environmental problems within its overall research portfolio. Research devoted to potential environmental threats may help to avoid or reduce the impact of such threats or at the very least put into place the scientific capacity to address them."<sup>97</sup> Exploratory grants research will include the area of nanotechnology, which is one of the Administration's six science and technology priorities for Federal investment.

EPA Science Advisor: In FY 2005, EPA will continue to support the EPA Science Advisor. The Science Advisor will be responsible for ensuring the availability and use of the best science to support Agency policies and decisions, as well as advising the EPA Administrator on science and technology issues and their relationship to Agency policies, procedures, and decisions. The Science Advisor's office will continue to promote effective partnerships with EPA programs and regions, assist them in their efforts to strengthen environmental science, and provide for timely and open communication on critical science matters.

Implementing Information Quality Guidelines: In October 2002, EPA released its *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by the Environmental Protection Agency*.<sup>98</sup> These guidelines were developed in response to guidelines issued by the Office of Management and Budget pursuant to the Data Quality Act. EPA's guidelines present the Agency's procedures for ensuring that the information we disseminate is of high quality. The guidelines also provide the public an opportunity to request correction of information. EPA's Guidelines are based on the Agency's existing Quality System, as well as its Peer Review and Risk Characterization policies.

---

<sup>97</sup> National Research Council of the National Academies. *The Measure of STAR: Review of the U.S. EPA's Science to Achieve Results (STAR) Research Grants Program*. Washington D.C.: National Academies Press. (2003)

<sup>98</sup> U.S. EPA, Office of Research and Development. *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency*. Washington, D.C.: EPA. Accessed January 14, 2003. Available only on the internet at: <http://www.epa.gov/oei/qualityguidelines/>

While the Agency has extensive procedures in place to ensure that the information it disseminates meets high standards for quality, objectivity, and integrity, further actions will be taken to ensure that such information is current and fully complies with the guidelines. For example, the Agency will update some of its scientific and technical products, such as Integrated Research Information System (IRIS) assessments, to respond to requests for correction. In its first year of implementing the Guidelines, the Agency has received requests to correct assessments of two chemicals (Barium and Bromate) contained in the IRIS database. In both cases, the petitioner calls attention to new or additional information. The Agency expects that more correction requests are forthcoming.

As noted in a recent study on EPA regional use of science in decision-making, there is a need to enhance the capability of regional offices to conduct peer review. The study acknowledged that funding is needed to support greater peer review of the regions' major science products and that a mechanism is needed to identify independent, expert reviewers in a timely fashion to enhance the use of science in regional decisions. In FY 2005, the Agency will establish an extramural mechanism to assist Regions in identifying external peer reviewers and securing their advice and assistance.

Research: Climate Change: In 2002, President Bush established the U.S. Climate Change Science Program (CCSP) as part of a new cabinet-level management structure to oversee public investments in climate change science. The CCSP, which incorporates the U.S. Global Change Research Program (USGCRP) and the Climate Change Research Initiative established by the President in 2001, coordinates and integrates scientific research on global change and climate change sponsored by 13 participating departments and agencies of the U.S. Government, including the EPA<sup>99</sup>. All planning and activities in EPA's Climate Change Research program are coordinated with the CCSP and NOAA.

In 2003, the Climate Change Science Program prepared and released a *Strategic Plan for the Climate Change Science Program* in response to the President's direction to accelerate climate change research activities in order to provide the best possible scientific information to support public discussion and decision-making on climate-related issues<sup>100</sup>. In FY 2005, in coordination with the CCSP *Strategic Plan* (Criteria: Relevance), the Agency will continue research and assessment activities of the potential effects of global change on air quality, water

quality, human health, and ecosystems, focusing on those issues for which the Agency has specific expertise and the necessary statutory authority.

EPA's Climate Change Research Program's draft *Research Strategy*<sup>101</sup> and the Multi-Year Plan (MYP)<sup>102</sup> guide the Agency's climate change research and assessment efforts. The *Research Strategy* has been externally peer reviewed, and final editorial changes are being made

---

<sup>99</sup> Climate Change Science Program and the Subcommittee on Global Change Research. *Our Changing Planet. Fiscal Year 2003*. Accessed December 14, 2003. Available on the Internet: <http://www.usgcrp.gov/usgcrp/Library/ocp2003.pdf>

<sup>100</sup> Climate Change Science Program and the Subcommittee on Global Change Research. *Strategic Plan for the U.S. Climate Change Science Program*. Accessed December 12, 2003. Available on the Internet: <http://www.climate-science.gov/Library/stratplan2003/final/ccspstratplan2003-all.pdf>

<sup>101</sup> EPA, Office of Research and Development. *Global Change Research Strategy*. Accessed November 20, 2003. Available only on the Internet: <http://www.epa.gov/ord/htm/researchstrategies.htm#drs02>

<sup>102</sup> EPA, Office of Research and Development. *Global Change Multi-Year Plan*. Accessed January 14, 2003. Available only on the Internet: <http://www.epa.gov/osp/myg/global.pdf>



to ensure its complete consistency with the CCSP *Strategic Plan*. The MYP, which provides more detailed information about the implementation of the program described in the *Research Strategy*, is a more dynamic document, adapting to evolving research results to ensure that the research conducted is relevant to EPA's mission and the greatest research needs of the scientific and stakeholder communities. (Criteria: Relevance). The Agency will coordinate all research and assessment activities in FY 2005 with the CCSP *Strategic Plan* and through interagency working groups convened by the CCSP. (Criteria: Relevance).

Ecosystems-related work will evaluate the potential effects of global change on aquatic ecosystems including coral reefs. Assessing aquatic ecosystems capitalizes on the extensive EPA experience in this area and acknowledges the important influences of terrestrial ecosystems and land use change alongside the impacts of climate change. The Agency will complete an assessment of the potential impacts of climate change on goods and services provided by aquatic ecosystems in the San Francisco Bay Basin and Watershed in FY 2005, as well as an initial synthesis of the scientific literature on the effects of climate variability and change on the potential future distribution of nonindigenous invasive species, and consequent impacts on aquatic ecosystem health. (Criteria: Performance).

Other efforts will develop models and methodologies for analyzing the potential consequences of global change on regional air quality, including tropospheric ozone and particulate matter concentrations, to inform air quality managers and other decision makers about how global climate change and future technology changes could influence ambient air quality. The aim is to better characterize the changes in regional emissions and atmospheric composition. This work will be done in collaboration with NASA, with the NSF-sponsored National Center for Atmospheric Research (NCAR), and with NOAA.

Research on the potential effects of global change on water quality will continue to support understanding the impacts on pollutants and pathogens in surface and ground waters. These changes could have ramifications for aquatic ecosystems, human recreational uses, and drinking water. EPA will explore the implications of global change for public drinking water systems and wastewater treatment facilities.

### ***Research: Pesticides and Toxics***

EPA conducts a multidisciplinary research program to examine risks resulting from exposure to pesticides and toxics. The program is designed to meet the requirements of the Food Quality Protection Act (FQPA)<sup>103</sup> and support the Agency's efforts to reduce current and future risk to the environment by preventing or controlling the production of new chemicals that pose unreasonable risk, as well as assessing the risks of chemicals already in commerce (under Toxic Substances Control Act - TSCA<sup>104</sup> - and Federal Fungicide, Insecticide and Rodenticide Act - FIFRA).<sup>105</sup>

The research conducted under this objective provides direct support to EPA in implementing the requirements of these statutes. The program is guided by multiple EPA long-

---

<sup>103</sup> Food Quality Protection Act of 1996, Pub. L. No. 104-70, Section 405.

<sup>104</sup> Toxic Substances Control Act of 1976, Title 15, Chapter 53, Section 2609

<sup>105</sup> Federal Fungicide, Insecticide and Rodenticide Act of 1972, Title 7, Chapter 6, Section 136r

range strategies and plans, including the Safe Food Multi-Year Plan (MYP),<sup>106</sup> the Safe Pesticides/Safe Products MYP,<sup>107</sup> the Human Health Research Strategy, the Strategy for Research on Environmental Risks to Children, and the Ecological Research Strategy. (Criteria: Relevance) EPA's research and regulatory programs collaborate on a regular basis to identify future research topics of highest priority.

Safe Food: EPA's Safe Food Research program supports efforts to conduct aggregate (sum of exposures to the same chemical from multiple sources and multiple routes of exposure) and cumulative (sum of exposures from chemicals with a common mode of action) risk exposure assessments and tolerance (allowable levels) assessments on pesticides. Improved assessments will result in better decisions to protect the public from the consumption of unacceptable levels of pesticides on processed and unprocessed foods.

In FY 2005, the Agency will continue to conduct research under four broad themes to meet the requirements of FQPA: 1) evaluate aggregate risks; 2) evaluate cumulative risks; 3) apply 10X safety factors to protect children and other sensitive populations; and 4) use physiologically-based pharmacokinetic (PBPK) data and models to refine risk assessments and decisions regarding pesticide safety. However, to better coordinate research activities, EPA will realign major components of food safety research under the human health research program. More specifically, health effects and exposure research will be consolidated under the human health program, as well as extramural research under the STAR program.

Risk management research, which will remain in the Safe Food program in FY 2005, will continue to develop standard protocols for assessing treatment effects on pesticide residues in drinking water, and testing the efficiency of drinking water treatment systems and the formation of by-products for pesticide classes of high priority (non-Candidate Contaminant List). Information collected from these protocols will be used in aggregate and cumulative exposure assessments. The first phase of a drinking water protocol to be used by pesticide manufacturers will be completed in FY 2005.

Safe Pesticides/Safe Products Research: Protecting human health and the environment from harmful agents carries the challenge of developing the capability to assess hundreds of possible hazardous effects for tens-of-thousands of important commercial chemicals. Establishing strategic priorities to focus available resources on chemicals that pose the greatest potential risks is essential to EPA in minimizing risks from harmful agents. Over the past three decades, EPA has developed an extensive arsenal of test methods for regulatory risk assessment. In FY 2005, the Safe Pesticides/Safe Products research program will continue to refine many of these methods to reduce uncertainty with respect to interpreting the results of tests in EPA decisions. The program will also address the greater challenge of developing the science necessary for EPA to know when and how to apply those test methods to gain maximum insight into the potential risks of a specific chemical.

EPA's Safe Pesticides/Safe Products research program improves the efficiency of testing by developing spatially explicit, geographically based probabilistic risk assessment methods for

---

<sup>106</sup> U.S. EPA, Office of Research and Development. *Safe Food Multi Year Plan*. Washington, D.C.: EPA. Accessed January 14, 2003. Available only on the internet at: [www.epa.gov/osp](http://www.epa.gov/osp)

<sup>107</sup> U.S. EPA, Office of Research and Development. *Safe Pesticides/Safe Products Multi Year Plan*. Washington, D.C.: EPA. Accessed January 14, 2003. Available only on the internet at: [www.epa.gov/osp](http://www.epa.gov/osp).

ecological risks, by developing the basis to assess the risks of plant-incorporated protectants (PIPs), and by developing ways to evaluate the safety of newly discovered or novel hazards.

To further the development of a scientific foundation for probabilistic risk assessment methods for wildlife populations, in FY 2005 the research program will include surrogate test species in the Interspecies Correlation Estimations (ICE) model, which will be used to estimate toxic effects on endangered species, and provide an upgraded Pesticide Root Zone (PRZM) model for use in characterizing ecological risks.

EPA is continuing to build on research launched under the FY 2003 Biotechnology Initiative focusing on plant-incorporated protectant crops. In FY 2005, the Agency will deliver a final report outlining the state-of-the-art in tools for monitoring resistance development in the field and the use of target pest ecology to refine Insect Resistance Management strategies, as they are determined in risk assessment practice. This report will focus on data gaps in pest biology, ecology, and population dynamics related to insect resistance development. The report will also provide insight on the development of appropriate tools to identify and measure resistance in field populations of target pests.

In FY 2005, EPA will sponsor a workshop on the analysis of population genetics of invertebrates in agro-ecosystems. Agency risk assessors will use workshop results to better understand and assess pest genetic architecture and the changes that occur due to pest exposure to genetically modified crops, in order to inform future resistance management plans.

Risk management research will deliver verified/validated resistance management models for delaying resistance to PIP crops in target insects. Models can describe the development of resistance to PIPs by targeted insects and various approaches to mitigating the development of resistant insect populations. The Agency currently employs nascent models to develop resistance management strategies.

EPA will continue to upgrade the pesticide spray drift model and integrate the Agency's research with the Spray Drift Task Force's research. An upgraded spray drift exposure model will be produced with added modules for orchard and ground application of pesticides for assessing risks associated with re-volatilization and secondary drift from the near field to the meso field.

Little is known about the environmental distribution and adverse environmental effects of perfluorooctane sulfonate (PFOS), a persistent organic pollutant, and the alternative chemicals being developed to replace it. In FY 2005, EPA will deliver "A Report on Approaches to Assess Ecological Risk of Fluorinated Chemicals in Small Fish and Amphibian Models". (R&D Criteria: Performance) This report will characterize PFOS reproductive and developmental toxicity in small fish and amphibians and compare the toxicity of PFOS and substitutes, as well as determine the role of life stage in susceptibility to toxicity. The utility of genomic and proteomic techniques for PFOS toxicity will be assessed and the factors impacting ecological risk will be made clear. Research will yield an integrated model to assess the risk of fluorinated chemicals.

Persistent Bioaccumulative Toxics: The Agency will continue to support prevention, minimization, and, when possible, elimination of Persistent Bioaccumulative Toxics (PBTs) by

improving methods for their identification and testing. These pollutants pose risks because they are toxic, persist in ecosystems, and accumulate in humans, fish, and wildlife as a result of direct exposure and through the food chain. EPA has committed, as outlined in the Agency's draft Multimedia Strategy for Persistent Bioaccumulative and Toxic Chemicals, to create a coordinated, Agency-wide system that will address the multimedia issues associated with priority PBT pollutants. (Criteria: Relevance) This research is necessary, because conventional pollution control techniques will not provide a long-term, sustainable solution. PBTs must eventually be eliminated at their source through process changes or chemical substitution in products. EPA will advance the understanding of exposure, assessment, and management of PBTs while simultaneously working toward PBT prevention.

EPA measures progress on actions under the Agency's multimedia strategy through environmental and human health indicators (e.g., reduced levels of PBTs in human blood or fish tissue), chemical release, waste generation, use indicators and other measures. (Criteria: Relevance)

### ***Human Health Risk Assessment***

Human health risk assessment program priorities are set based on input from various parts of EPA, other governmental organizations, and the public. Highly trained scientists and administrative personnel act on these priorities to produce documents and information responsive to the needs of EPA's program offices, regional offices, and regulatory partners in other Federal agencies; Tribal, state, and local organizations; and the public.

EPA establishes priorities for human health assessments through internal consultations and advice from other Federal agencies and regulatory partners, and the regulated community, both private and public sectors. The Agency publishes draft health assessments relevant to all media programs, addresses comments from expert external peer reviewers, and publishes final assessments on the Agency's Integrated Risk Information System (IRIS) for use by all EPA programs and on the Internet for use by risk assessors in States and by organizations around the world.

In FY 2005, work will continue on major human health assessments of national significance, including trichloroethylene (TCE), ammonium perchlorate, dioxin, methyl-tertiary-butyl ether (MTBE), tetrachloroethylene, and asbestos. These major assessments are of such consequence that other Federal agencies and often the National Academy of Sciences become involved in an expert review capacity. When completed, these assessments are also made available through IRIS. Other lower profile assessments that are still of high priority to Agency programs and the public will be peer reviewed and completed in FY 2005 and made available on IRIS.

Research efforts will also support EPA's National Air Toxics Assessment (NATA) Program by deriving peer reviewed cancer unit risk and chronic (RfC and RfD) and acute (ARE) non-cancer reference values. Additional research includes supporting EPA's Drinking Water Program by characterizing -- in peer reviewed documents -- the magnitude and severity of risks associated with exposure to drinking water contaminants and by developing methods for quantitative microbial risk assessment. Other efforts will assist EPA in assessing chemical risks and supporting EPA's Superfund Program by providing 1) site-specific technical support for

Superfund risk and exposure assessments and 1) peer-reviewed provisional toxicity values to support regional office decision-making.

Another component of the program focuses on health assessment methods development and technical support and assistance. EPA's Risk Assessment Forum coordinates the development and external expert peer review of various risk assessment guidelines and other guidance documents for use by all Agency programs. Methods development research will continue on microbial risk assessment techniques, assessment approaches for addressing complex mixtures, cumulative/aggregate risks, susceptible sub-populations, and development of tools for quantifying dose-response, such as Benchmark Dose software and nasal dosimetry methodologies. Expert internal and external peer reviewers help assure the relevance and quality of EPA health assessment research.

Finally, Agency scientists and other personnel produce Air Quality Criteria Documents (AQCDs) after consultation on priorities with EPA staff. The Clean Air Science Advisory Committee (CASAC) reviews the draft AQCDs and makes recommendations, which the Agency addresses in producing the final document. Expert staff provides technical support to assist in interpreting the AQCDs for EPA program office use in decision-making. In FY 2005, EPA will deliver a final Ozone Air Quality Criteria Document, which will provide technical support on the Ozone and Particulate Matter AQCDs, and will continue work on the Oxides of Nitrogen AQCD. These AQCD efforts to summarize the state-of-the-science on criteria air pollutants in peer-reviewed documents assist the Office of Air and Radiation in fulfilling its statutory responsibilities.

### ***Research: Computational Toxicology***

The emerging sciences of genomics, computational methods, systems biology, and bioinformatics have created an opportunity to revolutionize the science used in risk assessments of environmental agents. While EPA has long worked toward obtaining the studies needed to reduce, refine, and replace test methods, computational toxicology (CT) research under this objective has the potential to lead to more sensitive and specific testing protocols and risk assessment methods and to a reduction in animal testing to a far greater extent by developing alternative techniques for prioritizing chemicals for further testing. A framework for a Computational Toxicology Research Program in EPA, which has undergone peer review, has been developed and will be released in FY 2004. This research supports the Molecular-level Understanding of Life Processes activity, one of the Administration's six interagency priority areas for research and development, by employing, among other things, the use of genomic information and modern computational techniques to enable better environmental management. (Criteria: Relevance)

EPA's Computational Toxicology Research Program has three objectives: 1) use computational tools to improve empirical linkages between exposure to an environmental agent, presence of the agent in the body, effects on a target organ site, and expression of toxicity; 2) develop strategies for prioritizing chemicals for subsequent screening and testing; and 3) develop better methods and predictive models to improve quantitative risk assessment. The Agency initiated this research program in FY 2003 with the broader objectives of expanding its ability to assess and predict the human health and ecological risks from environmental exposures and reducing its reliance on animal testing protocols. In FY 2005, the Agency will continue to make

progress in these areas. Specifically, EPA will conduct research that demonstrates how CT can integrate new scientific advances that will allow more accurate risk assessments, thereby optimizing the cost of EPA regulations, while protecting human and ecological health.

The FY 2005 CT initiative will build upon the current core program by accelerating the use of bioinformatics and other computational approaches and apply the program to address other high priority regulatory issues, including the assessment of important classes of environmental agents. In FY 2005, the Agency will begin to develop computational models that could be used to help prioritize anti-microbial agents and inerts for screening and testing requirements by the Agency. This initiative specifically addresses needs identified in the Agency's 2003-2008 Strategic Plan (Criteria: Relevance), including:

- Increasing the efficiency of registration and re-registration of pesticides and other agents to ensure that they meet current safety requirements;
- Protecting human health and the environment by identifying, assessing and reducing risks presented by chemicals, including antimicrobial agents;
- Identifying and assessing chemical, pesticide and microorganism potential risks; and
- Setting priorities for potential risks

EPA program offices will continue to work collaboratively to identify the most important classes of chemicals and risk assessment needs for prioritization and strategic testing.

Products of computational toxicology research conducted by EPA researchers, and through contracts and cooperative agreements are subjected to quality assurance (QA) procedures. The Science to Achieve Results program (STAR) also provides research results complementing EPA in-house research. In 2005, the STAR program will continue to support research leading to the development of High Throughput Screens and studies that use a systems biology approach for hazard identification and risk assessment. Under STAR, all research projects are selected through a rigorous competitive external peer review process and designed to ensure that only the highest quality efforts receive funding support. (Criteria: Quality)

### ***Research: Endocrine Disruptor***

The EDC research program includes a diverse, multi-disciplinary set of research involving human health and wildlife. Research to provide a better understanding of the science underlying effects, exposure, assessment, and management of endocrine disruptors will direct and refine future research and will develop tools that can help determine the impact of EDCs on human health and the environment. Research in direct support of EPA's screening and testing programs will evaluate current testing protocols and develop new protocols to evaluate potential endocrine effects of environmental agents. EDC research will assist decision makers in working toward reducing and eliminating exposure of humans and ecosystems to EDCs.

Evidence suggests that humans and animals, both domestic and wildlife species, have suffered adverse health effects resulting from exposure to environmental chemicals that interact with the endocrine system.<sup>108</sup> Collectively, these substances are referred to as endocrine

---

<sup>108</sup> U.S. EPA, Office of Research and Development. *Environmental Endocrine Disruption: Effects Assessment and Analysis Document*. Risk Assessment Forum. Washington DC (1996)

disrupting chemicals (EDCs). EDCs interfere with the production, release, transport, metabolism, binding, or elimination of natural hormones in the body responsible for the maintenance of equilibrium and the regulation of developmental processes. Reports of reproductive effects in humans over the last four decades, and increases in certain cancers that may have an endocrine-related basis (breast, prostate, testicular), have led to speculation about environmental causes.

Recognizing the potential scope of the problem, the possibility of serious health effects on populations, and the persistence of some EDCs in the environment, EPA developed a Research Plan<sup>109</sup> for Endocrine Disruptors in 1998. The EDC Research Plan was externally peer-reviewed by a panel convened by the Agency's Risk Assessment Forum. (Criteria: Relevance) The Research Plan is consistent with the overall Committee on Environment and Natural Resources (CENR) Federal research framework, the recommendations made in the 1999 report on "Hormonally Active Agents in the Environment"<sup>110</sup> published by the NAS, and recommendations made in the World Health Organization (WHO)'s "Global Assessment of the State of the Science of Endocrine Disruptors".<sup>111</sup>

The objective of the EDC research program is to improve the knowledge and understanding of the exposures and interactions of endocrine disruptors in the environment in order to improve risk assessment and risk management methods. EPA has also developed an EDC Multi-Year Plan<sup>112</sup> (MYP) that identifies the elements of the EDC research program the Agency will pursue in an integrated fashion. (Criteria: Relevance) The MYP and research strategy documents represent an ongoing effort to design and conduct relevant EDC research within well-defined priorities and goals.

As in the past, EDC-related work will be organized along an integrated pathway of effects, exposure, risk assessment, and risk management research. EPA's program includes areas that are of unique importance to EPA in helping the Agency meet its legislative mandates as well as research that serves to improve the basic understanding of EDCs, complementing research conducted at other Federal agencies, in other countries, and by industry.

Endocrine disruptors research in FY 2005 will address the priorities established in the 1998 plan by developing tools to identify hazards, characterize the extent of human and wildlife exposures to known and suspected EDCs, and manage risks from exposure to EDCs. This research focuses on three long term goals: 1) provide a better understanding of the science underlying the effects, exposure, assessment, and management of endocrine disruptors; 2) determine the extent of the impact of endocrine disruptors on humans, wildlife, and the environment; and 3) support EPA's screening and testing program mandated under the Food Quality Protection Act (FQPA) of 1996 and the Safe Drinking Water Act

---

<sup>109</sup> U.S. EPA, Office of Research and Development. *Research Plan for Endocrine Disruptors* (EPA/600/R-98/087). Washington DC: U.S. Government Printing Office. (1998)

<sup>110</sup> National Research Council. *Hormonally Active Agents in the Environment*. Washington D.C.: National Academy Press. (1999)

<sup>111</sup> International Programme of Chemical Safety. *Global Assessment of the State-of-the-Science of Endocrine Disruptors*. World Health Organization (WHO). (2002)

<sup>112</sup> U.S. EPA, Office of Research and Development. *Multi-Year Plan for Endocrine Disruptors*. Washington D.C.: EPA Accessed January 14, 2004. Available through the internet: [www.epa.gov/osp/myp](http://www.epa.gov/osp/myp)

Amendments<sup>113</sup>SDWAA) of 1996. Both FQPA and SDWAA authorize EPA to institute a screening program for estrogenic and other endocrine effects.

While there is a wealth of data available on some endocrine disruptors, much more research is needed for the Agency to carry out its large number of mandates. In FY 2005, EPA will continue to develop and evaluate an innovative DNA microarray and other state-of-the-art analytical methods for EDCs. Using genomics in the continued development of improved molecular and computational tools that can be used to prioritize chemicals for screening and testing is within the “Molecular-level Understanding of Life Process” priority, which is one of the Administration’s six science and technology priorities for federal investment. (Criteria: Relevance)

Other important areas of research to be conducted in FY 2005 include: determining whether exposures to endocrine disrupting pesticides during development and maturation of the immune system alter immunocompetence later in life; investigating potential sources of EDCs including wastewater treatment plants and concentrated animal feeding operations and the ability of conventional and advanced drinking water treatment processes to remove EDCs; and continuing a longitudinal study started in FY 2004 designed to examine very young children’s aggregate exposures to selected pesticides, EDCs, and persistent pollutants. The EDC research program has identified and described appropriate, strategic performance measures and schedules within the EDCs MYP. (Criteria: Performance)

### ***Research: Fellowships***

EPA fellowships are administered through a variety of programs including: the Science To Achieve Results (STAR) graduate fellowship program, the Greater Research Opportunities (GROs) program, the American Association for the Advancement of Science (AAAS), and more recently the Association of Schools of Public Health (ASPH). The STAR graduate and GRO fellowship programs are educational assistance whereas the AAAS and the ASPH fellowships are professional development opportunities in direct support of EPA.

A blue ribbon panel of the EPA Science Advisory Board recommended in 1994 that EPA enhance its environmental education programs for training the next generation of scientists and engineers. To meet that challenge in 1995, EPA initiated the Science To Achieve Results (STAR) graduate fellowship program. This program is designed to attract the brightest and most dedicated students in the Nation for training in scientific and engineering disciplines pertaining to the protection of public health and the environment. Fellowships are awarded through an external competitive review process. (Criteria: Quality) The STAR fellowship program is the only Federal fellowship program designed exclusively for students pursuing advanced degrees in the environmental sciences and engineering. This program is open to doctoral and entering Masters’ degree students who plan to attend accredited US universities. EPA receives roughly 1,300 applications per year to the program. In FY 2005, the Agency will invest additional resources to support STAR graduate fellowships. This additional investment will extend the purpose of developing high quality scientists across multiple disciplines, including the biological and physical sciences, mathematics, computer sciences, and engineering that will benefit EPA, the private sector, and the entire Nation.

---

<sup>113</sup> Safe Drinking Water Act Amendments (1996)



Through the GRO program, EPA offers undergraduate and graduate fellowships to students attending minority academic institutions. This undergraduate student program was initiated in 1982 as a means to bolster the ability of these institutions to offer excellent training for minority students in environmental disciplines. To qualify, students must attend a fully accredited four-year U.S. minority academic institution, which include: Historically Black Colleges or Universities (HBCU), Hispanic Serving Institutions (HSIs), and Tribal Colleges (TCs). The graduate GRO stipend is equivalent to that of STAR fellowship including an annual stipend, fixed amount for authorized expenses, and tuition and fees. Undergraduate fellowships recipients receive lesser amounts of the same categories and must participate in a summer intern program after their first year of the fellowship, during which the fellow completes a summer project meant to complement the work they are doing while supported by the fellowship program at their home institution.

Since 1981, EPA in a joint effort with the AAAS has operated the Science and Engineering Fellowship Program, which places highly qualified and motivated technical professionals in EPA headquarters offices for one year, to work on projects at the science-policy interface. The program operates through a cooperative agreement and its purpose is to enhance the careers of highly trained technical professionals by providing first-hand knowledge of how EPA uses technical information in its decision making process. Through 2003, the Agency has hosted roughly 190 fellows. To be eligible, a candidate must have a PhD degree or equivalent in a technical discipline with an environmental focus. Candidates must pass several layers of peer review and secure an appropriate placement in EPA headquarters before being offered a fellowship.

In 2003, EPA debuted a new professional development program called the Environmental Public Health Fellowship Program. Under a cooperative agreement with the Association of Schools of Public Health (ASPH), eligible fellows are placed in EPA labs, centers, and offices to conduct projects that contribute to EPA's public health mission. In FY 2005, EPA will invest additional resources to support ASPH fellowships. This investment will further extend the important contribution to public health issues that ASPH fellows provide within EPA. To be eligible for this program, a candidate must have graduated from a US university with an accredited school of public health that is a member in good standing of ASPH. Candidates must possess a Masters of Public Health degree or equivalent, pass a peer review process, and secure an appropriate placement in EPA before being offered a fellowship. Fellows work independently, with the guidance of an EPA mentor. The fellowship provides a stipend, plus funds for health insurance, relocation, orientation, and program-related travel.

### ***Homeland Security: Preparedness, Response, and Recovery***

EPA's Homeland Security research program supports one of six Administration FY 2005 Interagency Research and Development Priorities – Homeland Security (Criterion: Relevance). The Agency intends to increase the state of the knowledge of potential threats, as well as its response capabilities, by assembling and evaluating private sector tools and capabilities so that preferred response approaches can be identified, promoted, and evaluated for future use by first responders, decision makers, and the public. EPA will work with Federal institutions and other organizations through collaborative research efforts to help provide strong homeland defense and response programs.

In order to facilitate this research, EPA established the National Homeland Security Research Center to conduct critical cross-cutting research to provide near-term, appropriate, affordable, reliable, tested, and effective technologies and guidance. Research focuses on preparedness, risk assessment, detection, containment, decontamination and disposal in response to chemical and biological attacks. The Center has put into place standard operating procedures and quality assurance plans to ensure quality in funding its research (Criterion: Quality). In addition, the Center and its programs are undergoing a number of reviews including those of the National Academy of Sciences, EPA Science Advisory Board, and Board of Scientific Counselors (Criteria: Relevance and Quality).

This research contributes to the Preparedness, Response, and Recovery goal of EPA's Homeland Security Strategic Plan<sup>114</sup>, which describes the goals and priorities for the Agency's Homeland Security program (Criterion: Relevance). Under this goal, EPA will focus on strengthening and broadening its response capabilities, clarifying its roles and responsibilities to ensure an effective response, and promoting improved response capabilities across government and industry for areas in which EPA has unique knowledge and expertise.

**Water Security Research:** Water security research will focus on developing, testing, demonstrating, communicating, and implementing enhanced methods for detection, treatment, and containment of biological and chemical warfare agents and bulk industrial chemicals intentionally introduced into drinking water systems.

In FY 2005, detection work will focus on testing and verifying innovative detection devices, developing new devices or methods for rapid response, and pilot-scale testing of detection networks and early alert and warning systems. Containment research will seek to develop, evaluate, and test methods and procedures for preventing the spread of contaminants in drinking water sources and distribution systems, with particular emphasis on the use of models to predict contaminant flow and isolation. Research will also focus on development, evaluation, and testing of methods, technologies, and procedures for decontaminating drinking water, with consideration of efficacy, utility, safety, and cost.

Scientific and technical support activities will continue to provide assistance for managing threats to, or actual attacks on, water infrastructure. Emphasis will be placed on: refining a protocol for first responders; improving detection, containment, and decontamination techniques and technologies based on vulnerability assessments; improving approaches for coordination of water managers and public health officials in responding to terror events; and enhancing physical security of water systems through new design and security techniques that may result in inherently safer water infrastructure. In FY 2005 guidance and support will be provided on improved detection, containment, and decontamination methods. Research will target utility managers and emergency responders to help institute monitoring approaches, and EPA will seek the help of public health officials in identifying and controlling disease outbreaks. Other efforts will improve techniques and technologies for sharing critical information to assist utility managers and first responders through a structured information sharing strategy, and relaying information to stakeholders. Emphasis in FY 2005 will be on implementation of tools previously developed and outreach to stakeholders. Efforts will also begin to address research related to protecting wastewater infrastructure from physical or contaminant threats or attacks.

---

<sup>114</sup> U.S. EPA. *Strategic Plan for Homeland Security*. Washington D.C. : EPA. Accessed on January 14, 2004. Available only online at: [http://www.epa.gov/epahome/downloads/epa\\_homeland\\_security\\_strategic\\_plan.pdf](http://www.epa.gov/epahome/downloads/epa_homeland_security_strategic_plan.pdf)

Rapid Risk Assessment Research: Rapid risk assessment research will focus on: 1) implementation of the products developed to date through outreach activities and 2) initiation of the second generation of risk assessment building on knowledge gained in all areas of the risk assessment paradigm.

In FY 2005, research will include: risk assessment of by-products of contamination; refining toxicity databases; developing transport, fate, dispersion, and exposure parameters; and developing computer-based tools to aid decision makers in assessing the risks associated with biological and chemical attacks. In addition, work will begin on establishing protocols for communicating risks, developing exposure assessments, and improving biological risk assessment approaches, including sampling procedures to ensure effective decontamination. Risk assessment work will also focus on providing scientific data and methodologies to support determination/revision of cleanup guidance goals as new toxicity information becomes available and as new potential agents are identified. This will involve screening the literature for major health information and coordinating with other entities. Risk assessments may also be used in the development of an approach for integrating chemical and radiological risk paradigms to address a potential “dirty bomb” threat.

Risk communication will be an ongoing function requiring revised training materials tailored to thousands of local communities, first responders, building owners/operators, water supply systems, and other stakeholders. These activities will incorporate initial tools and other products developed through research in this area.

Biologicals Research: New research will be initiated that will include development and validation of environmental sampling and analysis methods for known and emerging biological threat agents. Such methods are critical to ensuring appropriate response and recovery actions and developing necessary laboratory support capacity. This research will also produce data, information, and technologies to assist EPA in developing standards, protocols, and capabilities to recover from and mitigate the risks associated with biological attacks.

## **FY 2005 CHANGE FROM FY 2004**

### **S&T**

- (+\$7,854,700, +25.2 FTE): This technical adjustment realigns cumulative risk resources from the Safe Food/FQPA research program to the human health research program. This move consolidates EPA’s cumulative risk research under the human health and ecosystems program/project and aids in the planning and coordination of this effort. There will not be any programmatic or performance impacts, since the actual work will not change in nature or scope.
- (+\$4,080,093, +4.0 FTE): In FY 2005, EPA will devote additional resources to computational toxicology (CT) research. This investment will build upon the current core program by accelerating the use of bioinformatics and other computational approaches and apply the program to address high priority regulatory issues, including the assessment of important classes of environmental agents. In FY 2005, the Agency

will begin to develop computational models that could be used to help prioritize anti-microbial agents and inerts for screening and testing requirements.

- (+\$2,000,000): This increase supports EPA's efforts to implement information quality guidelines. While the Agency has extensive procedures in place to ensure that the information it disseminates meets high standards, further actions will be taken to ensure that such information is current and fully complies with the guidelines. In FY 2005, the Agency will establish an extramural mechanism to assist Regions in identifying external peer reviewers and securing their advice and assistance.
- (+\$1,256,500, +2.5 FTE): This increase reflects redirected resources to further support EPA's Science to Achieve Results (STAR) graduate fellowships program. The majority of funds will be redirected from ground water and surface water interaction research within Goal 3. This investment will further support development of high quality scientists across multiple disciplines, including the biological and physical sciences, mathematics, computer sciences, and engineering that will benefit EPA, the private sector, and the entire Nation.
- (+\$600,000): This increase reflects new resources to support the Environmental Public Health Fellowship Program through the Association of Schools of Public Health (ASPH). This investment will further the important contribution to public health issues that ASPH fellows provide. Under a cooperative agreement with ASPH, eligible fellows are placed in EPA to conduct projects that contribute to the Agency's public health mission. Candidates must possess a Masters of Public Health degree or equivalent, pass a peer review process, and secure an appropriate placement in EPA before being offered a fellowship.
- (+\$300,000): This reflects an increase to EPA's Integrated Risk Information System (IRIS) program to improve the overall quality and accessibility of the IRIS database.
- (-\$22,170,900): This reduction eliminates extramural ecosystems research under the Science to Achieve Results (STAR) program. STAR grants (approximately 50) will be eliminated under the following areas: 1) estuarine and Great Lakes Programs (EaGles), including the development and evaluation of new and existing indicators for the West U.S. Coast, East U.S. Coast, Gulf of Mexico, and the Great Lakes, as well as cross-regional indicators; 2) genomic indicators of water, including the development of new indicators based on genomic-enabled research methods and approaches; 3) invasive species research to predict a species' potential to invade vulnerable ecosystems, particularly aquatic ecosystems, as well as early detection and rapid response, especially for inland aquatic and coastal estuarine systems; 4) the statistics center that conducts advanced statistical science crucial to environmental research at many stages, including design, development, and analysis; and 5) new watershed classification schemes supporting the design of efficient monitoring strategies, diagnosis of biological impairment, and prioritization of watersheds. As a result of this reduction, STAR efforts designed to establish or improve the connection between ecosystems stressors and effects, serving as input to decisions at the regional, state, and local levels, will be discontinued. The Agency will continue to support ecosystem protection research through its in-house research program.

- (-\$7,854,700, -25.2 FTE): This technical adjustment reflects the realignment of resources supporting Safe Food/FQPA cumulative risk research. Resources are being realigned to the human health research program. Given the core scientific nature of this research and the focus on mode-of-action, the work more logically fits under the human health research program as opposed to the problem-driven, FQPA research program. The movement of resources will not diminish support for the implementation of FQPA, nor will there be any programmatic or performance impacts, since the actual work will not change in nature or scope.
- (-\$4,860,000): This decrease reflects the elimination of Science to Achieve Results (STAR) grants to fund research on endocrine disrupting chemical (EDCs). EPA will maintain in-house research in this area.
- (-\$2,016,400): This decrease represents the elimination of Science to Achieve Results (STAR) grants in mercury research. EPA will maintain in-house research in this area.
- (-\$1,264,700): The Agency will no longer maintain the ultraviolet (UV) monitoring network. The network was originally designed to evaluate human exposure to UV. In 1996, the Agency refocused the network on ecological impacts. The UV network has achieved the ecological goals set out when it was redesigned in 1996.
- (-\$1,127,100): These resources represent savings that will result from consolidation of many information technology (IT) services, including call center and service desk, server management, and hardware and software acquisition, and IT equipment standardization. This will result in enhanced security and uniform maintenance requirements. Since these resources represent an efficiency savings, there is no negative programmatic impact.
- There are additional increases for payroll, cost of living, and enrichment for new and existing FTE.

#### Superfund

- (+\$2,000,000): This increase will support new Homeland Security work in the area of biological threat agents, including the development and validation of environmental sampling and analysis methods for known and emerging biological agents. This research is critical to ensuring appropriate response and recovery actions related to biological agents.
- (-\$8,193,900): This represents complete elimination of Homeland Security building decontamination research. EPA will not complete its core responsibilities to provide scientifically defensible and cost-effective decontamination methods and force it to disband the technical and engineering expertise that will be needed to address known and emerging biological and chemical threats in the future.

## ANNUAL PERFORMANCE GOALS AND MEASURES

### *Research*

#### **Research to Support FQPA**

In 2005 Provide high quality exposure, effects and assessment research results that support the August 2006 reassessment of current-use pesticide tolerances to EPA's Office of Pesticide Programs so that, by 2008, EPA will be able to characterize key factors influencing children's and other subpopulations' risks from pesticide exposure.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud. 09/30/05	data/tools
Children's exposure data and tools for assessing aggregate exposure to residential-use pesticides				

**Baseline:** The Food Quality Protection Act (FQPA) requires EPA to review, by August 2006, the pesticide tolerances for pesticides in use as of August 1996. EPA's Office of Research Development (ORD) has been conducting research to generate new and improved exposure and effects tools (data, methods, and models) to assist the Office of Pesticide Programs (OPP) in meeting this 2006 requirement. In FY05, ORD will provide OPP with a summary document highlighting the key results from ORD's exposure research program over the period 2000-2005. ORD will also provide OPP with validated children's pesticide exposure data and exposure factor data from multiple exposure field and laboratory studies. This high quality data will fill critical data gaps and eliminate the need for using many default assumptions currently used in the risk assessment process. An analysis of these results will also be performed to help identify remaining critical children's exposure data needs. ORD will also provide OPP with a suite of exposure-to-dose models that can be used to estimate aggregate pesticide exposures for children (by age and developmental life stage) and other susceptible subpopulations. These state-of-the-art models will be used by OPP to develop pesticide exposure distributions and address key issues associated with variability and uncertainty in exposure. With improved information, EPA can better protect public health from risks posed by pesticide use. Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research.

#### **Risk Assessment**

In 2005 Through FY2005 initiate or submit to external review 28 human health assessments and complete 12 human health assessments through the Integrated Risk Information System (IRIS). This information will improve EPA's and other decisionmakers' ability to protect the public from harmful chemical exposure

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Complete 4 human health assessments and publish their results on the IRIS website		4		assessments
Initiate or submit to external peer review human health assessments of at least 20 high priority chemicals.		20		assessments
Complete 8 human health assessments and publish their results on the IRIS website			8	assessments
Initiate or submit to external peer review human health assessments of 8 high priority chemicals			8	assessments

**Baseline:** IRIS is an EPA data base containing Agency consensus scientific positions on potential adverse human health effects that may result from exposure to chemical substances found in the environment. IRIS currently provides information on health effects associated with chronic exposure to over 500 specific chemical substances. IRIS contains chemical-specific summaries of qualitative and quantitative health information in support of the first two steps of the risk assessment process, i.e., hazard identification and dose-response evaluation. Combined with specific situational exposure assessment information, the information in IRIS may be used as a source in evaluating potential public health risks from environmental contaminants. IRIS is widely used in risk assessments for EPA regulatory programs and site-specific decision making. Updating IRIS with new scientific information is critical to maintaining information quality and providing decision makers with a credible source of health effects information. Achieving this APG will provide EPA and other decision makers with needed updates to IRIS so they can make informed decisions on how to best protect the public from harmful chemical exposure. In FY 2004, the Agency will complete 4 human health assessments and initiate or submit for external peer review human health assessments of at least 20 high priority chemicals. In FY 2005, EPA will complete 8 more assessments and initiate or submit for review an additional 8 assessments, for a two-year total of 12 completed assessments and 28 initiated or submitted for review. Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research.

**Regional Scale Ecosystem Assessment Methods**

In 2005 The baseline ecological condition of Western streams will be determined so that, by 2008, a monitoring framework is available for streams and small rivers in the Western U.S. that can be used from the local to the national level for statistical assessments of condition and change to determine the status and trends of ecological resources.

In 2004 Provide Federal, state and local resource managers with a means to more effectively determine long-term trends in the condition and vitality of Eastern U.S. stream ecosystems through measurements of changes in the genetic diversity of stream fish populations.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
A study of fish genetic diversity that demonstrates the power of this modern approach for evaluating condition and vitality of biotic communities to Federal, state and local resource managers.		1		report
Baseline ecological condition of Western streams determined			1	report

Baseline: This FY 2005 APG represents the first statistically-valid baseline for Western stream condition from state-based data. Although States and Tribes are required by the Clean Water Act (CWA) to monitor the condition of all their waters, they typically are only able to monitor at, and make scientifically defensible statements about, targeted sites that account for only a small percentage of their total waters. The monitoring framework used in the achievement of this APG removes scientific uncertainty by using a probability design approach (random sampling) to provide a more cost-effective, scientifically-defensible alternative for determining the condition of all the streams of a State or Tribe. EPA is transferring this approach to our State, Tribal, and EPA Regional partners in the Western U.S. so that they can determine the status and trends of their ecological resources. This monitoring framework also provides the scientific basis for identifying problems and needs for action, causes of harm, and successful mitigation and restoration efforts. This information will ultimately allow EPA to determine its success in achieving specific environmental outcomes.

Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. These evaluations will include an examination of a program's design to determine the appropriateness of a program's short-, intermediate-, and long-term goals and its strategy for attaining these. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research. Recommendations and results from these reviews will improve the design and management of EPA research programs and help to measure their progress under the Government Performance and Results Act (GPRA).

**Research on Riparian Zone Restoration**

In 2005 Provide technical guidance for implementing and evaluating projects to restore riparian zones, which are critical landscape components for the restoration of aquatic ecosystems and water quality, so that, by 2010, watershed managers have state-of-the-science field-evaluated tools, technical guidance, and decision-support systems for selecting, implementing, and evaluating cost-effective and environmentally-sound approaches to restore ecosystem services as part of watershed management

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Technical guidance for implementing and evaluating projects to restore riparian zones			1	tech. guide

Baseline: This FY 2005 APG will provide State, Tribal, Regional, and local watershed managers and restoration practitioners with technical guidance for selecting, implementing, and evaluating cost-effective and environmentally-sound approaches to restore ecosystem services. Essential ecosystem services are a result of naturally occurring processes and include such necessities for human health as a reliable supply of clean water, oxygen, nutrient cycling, and soil regeneration, as well as wildlife habitat and greenspace. Habitat destruction, invasive species, and non-point source pollutants such as excess nitrogen and eroded sediments adversely impact ecosystem services by contributing to the loss of ecosystems and/or their functions. Finding effective and efficient ways to protect and restore ecosystem services is necessary for human, as well as ecological, health. Riparian zones, i.e. those areas immediately adjacent to river and stream banks, are critical components of any watershed. Without a healthy riparian zone, it would be difficult, if not impossible, to achieve water quality goals. EPA is evaluating the effectiveness of riparian restoration techniques as tools to achieve goals such as water quality criteria or the restoration of specific ecosystem functions, such as denitrification. The guidance represented by this APG will help watershed managers and restoration practitioners in decision-making and on-the-ground implementation of scientifically- and technically-defensible restoration and management techniques.

Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research.

## Exposures and Effect of Environmental Research

In 2005 Provide risk assessors and managers with methods and tools for measuring exposure and effects in children, and characterizing and reducing risks to children from environmental agents in schools so that, by 2014, EPA will be able to demonstrate why some groups of people, defined by life stage, genetic factors, and health status, are more vulnerable than others to adverse effects from exposure to environmental agents.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud. 09/30/05	methods/tools
Methods and tools for measuring exposure and effects in children, and characterizing and reducing risks to children from environmental agents in schools				

Baseline: Current risk assessments for children are hampered by the lack of exposure and risk data and by a lack of methods that are appropriate for children. By FY 2004, EPA expects to have better data on children's exposures and on children's exposure factors. In FY 2005, research will build upon the improved data on children's exposures by compiling and analyzing the data, and translating the enhanced knowledge into better methods and approaches for measuring and estimating children's exposure and risk. The research in FY 2005 will culminate in initial approaches, ready for external peer review, on: how to conduct children's exposure and risk assessments; how to replace default uncertainty factors with data and distributions; and how to use biomarkers more appropriately in characterizing children's exposures. In addition, the increased understanding of children's exposures will provide evaluated methods for reducing their exposures and risks in schools and other indoor environments. These data, methods, and approaches will significantly improve the reliability, credibility, and transparency of children's risk assessments used by regulatory decision-makers throughout EPA and will provide to the public and to school and daycare officials tested methods to reduce children's exposures to chemical pollutants.

Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research. Recommendations and results from these reviews will improve the design and management of EPA research programs and help to measure their progress under the Government Performance and Results Act (GPRA).

## Mercury Research

In 2005 Provide information on managing mercury and other co-pollutants from utility boilers so that, by 2010, there is an extensive set of data and tools available to help industry and federal, state, and local environmental management officials make decisions on the most cost-effective ways to reduce or prevent mercury releases into the environment.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud. 1	report
Information on managing mercury and other co-pollutants from utility boilers				

Baseline: EPA's Mercury Study Report to Congress identified emissions from coal-fired utilities as one of the most significant contributors of mercury to the air (<http://www.epa.gov/oar/mercury.html>). On December 14, 2000, EPA determined that mercury emissions from coal-fired utilities needed to be regulated. Unless some form of multi-pollutant legislation for utility boilers is passed by Congress, a Maximum Achievable Control Technology standard (MACT) will be promulgated in December 2004 to control mercury emissions with full compliance of utilities expected by December 2007. There are a variety of technological options under development that could be used to more cost-effectively achieve any required mercury reduction. These control technologies need to be evaluated before utilities make decisions on how to comply. The state-of-the-science on emission controls for mercury will be advanced by investigating the factors that impact the species of mercury in coal-fired utilities flue gas and the performance of promising mercury control technologies. Results available by the end of FY 2005 will be documented and made available for use by utilities and other interested stakeholders.

Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. These evaluations will include an examination of a program's design to determine the appropriateness of a program's short-, intermediate-, and long-term goals and its strategy for attaining these. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research. Recommendations and results from these reviews will improve the design and management of EPA research programs and help to measure their progress under the Government Performance and Results Act (GPRA).

## Homeland Security Research

In 2005 Provide tools, case studies, and technical guidance so that, by FY 2006, first responders and decision-makers will have the methods, guidance documents, and technologies to enhance safety and to mitigate adverse effects of the purposeful introduction of hazardous chemical or biological materials into the environment.

In 2004 Provide a database of EPA experts on topics of importance to assessing the health and ecological impacts of actions taken against homeland security that is available to key EPA staff and managers who might be called upon to rapidly assess the impacts of a significant terrorist event.



In 2004 Provide to building owners, facility managers, and others, methods, guidance documents, and technologies to enhance safety in large buildings and to mitigate adverse effects of the purposeful introduction of hazardous chemical or biological materials into indoor air.

In 2004 Verify two point-of-use drinking water technologies that treat intentionally introduced contaminants in drinking water supplies for application by commercial and residential users, water supply utilities, and public officials.

Performance Measures:	FY 2003 Actuals	FY 2004 Pres. Bud.	FY 2005 Pres. Bud.	
Verify two treatment technologies for application in buildings by commercial and residential users, utilities, and public officials to treat contaminants in drinking water supplies.		2		verifications
Prepare ETV evaluations on at least 5 new technologies for detection, containment, or decontamination of chemical/biological contaminants in buildings to help workers select safe alternatives.		5		verifications
Through SBIR awards, support as least three new technologies/methods to decontaminate HVAC systems in smaller commercial buildings or decontaminate valuable or irreplaceable materials.		3		techs/methods
Prepare technical guidance for building owners and facility managers on methods/strategies to minimize damage to buildings from intentional introduction of biological/chemical contaminants.		9/30/04		guidance
A restricted access database of EPA experts with knowledge, expertise, and experience for use by EPA to rapidly assess health and ecological impacts focused on safe buildings and water security.		1		database
Risk assessment toolbox to predict and reduce the consequences of chemical/biological attacks in U.S. cities.			1	toolbox
Technical guidance for water system owners and operators on methods/strategies for minimizing damage from intentional introduction of biological/chemical contaminants			09/30/05	tech. guidance
Water system-related case studies that provide a spectrum of contingency planning situations and responses, including one specifically focused on the National Capital area			09/30/05	case studies

**Baseline:** EPA's homeland security research provides appropriate, effective, and rapid risk assessment guidelines and technologies to help decision-makers prepare for, detect, contain, and decontaminate building and water treatment systems against which chemical and/or biological attacks have been directed. The Agency intends to expand the state of the knowledge of potential threats, as well as its response capabilities, by assembling and evaluating private sector tools and capabilities so that preferred response approaches can be identified, promoted, and evaluated for future use by first responders, decision-makers, and the public. Examples of the types of products that will be available in FY 2005 include: sampling protocols, efficacy protocols, risk assessment tools, and threat scenario simulations. These products will enable first responders to better deal with threats to the public and the environment posed by the intentional release of toxic or infectious materials.

Beginning in FY 2005, regular evaluations by independent and external panels will provide reviews of EPA research programs' relevance, quality, and successful performance to date, in accordance with OMB's Investment Criteria for Research and Development. These evaluations will include an examination of a program's design to determine the appropriateness of a program's short-, intermediate-, and long-term goals and its strategy for attaining these. Reviewers will also qualitatively determine whether EPA has been successful in meeting its annual and long-term commitments for research. Recommendations and results from these reviews will improve the design and management of EPA research programs and help to measure their progress under the Government Performance and Results Act (GPRA).

## **VERIFICATION AND VALIDATION OF PERFORMANCE MEASURES**

### **FY 2005 Performance Measure: Children's exposure data and tools for assessing aggregate exposure to residential-use pesticides**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Information on managing mercury and other co-pollutants from utility boilers**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Methods and tools for measuring exposure and effects in children, and characterizing and reducing risks to children from environmental agents in schools.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Technical guidance for implementing and evaluating projects to restore riparian zones.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Baseline ecological condition of Western streams determined.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Complete 8 human health assessments and publish their results on the IRIS website**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Initiate or submit to external peer review human health assessments of 8 high priority chemicals**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Risk assessment toolbox to predict and reduce the consequences of chemical/biological attacks in U.S. cities.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Technical guidance for water system owners and operators on methods/strategies for minimizing damage from intentional introduction of biological/chemical contaminants.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

**FY 2005 Performance Measure: Water system-related case studies that provide a spectrum of contingency planning situations and responses, including one specifically focused on the National Capital area.**

**Performance Database:** Program output; no internal tracking system

**Data Source:** N/A

**Methods, Assumptions and Suitability:** N/A

**QA/QC Procedures:** N/A

**Data Quality Reviews:** N/A

**Data Limitations:** N/A

**Error Estimate:** N/A

**New/Improved Data or Systems:** N/A

**References:** N/A

### **EFFICIENCY/MEASURES/MEASUREMENT DEVELOPMENT**

As a measure of efficiency, the Agency will track the time it takes to process ecosystems protection research grant proposals, global change research grant proposals and endocrine disruptors research grant proposals from RFA closure to submittal to EPA's Grants Administration Division. The Agency will also track the number of peer-reviewed journal articles produced per scientific/engineering FTE.

### **COORDINATION WITH OTHER AGENCIES**

EPA participates in the White House Agricultural Biotechnology Working Group and works closely with FDA and the USDA's Animal Plant Health Inspection Service (APHIS). FDA and USDA APHIS each have statutory authorities that the Federal government uses in concert with EPA authorities to ensure the safety of biotechnology products. The three agencies (EPA, USDA, and FDA) discuss all major actions on genetically modified products. EPA, FDA and USDA APHIS have been working together to better disseminate information on biotechnology products and regulations. It is anticipated that a database of such information will be made available to the public in FY 2004. The Agency will continue to work with industry and USDA and FDA, as well as other relevant Federal agencies, on issues that arise from biotechnology innovation in agriculture.

Several Federal agencies sponsor research on variability and susceptibility in risks from exposure to environmental contaminants. EPA collaborates with a number of the Institutes within the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC).

For example, the National Institute of Environmental Health Sciences (NIEHS) conducts multi-disciplinary biomedical research programs, prevention and intervention efforts, and communication strategies. The NIEHS program includes an effort to study the effects of chemicals, including pesticides and other toxics, on children. EPA collaborates with NIEHS in supporting the Centers for Children's Environmental Health and Disease Prevention, which study whether and how environmental factors play a role in children's health.

The National Institute of Child Health and Human Development (NICHD) supports research on the reproductive, neurobiological, developmental, and behavioral processes that determine and maintain the health of children and adults. The NICHD program includes research on the effects of exposure to environmental agents on human development. NICHD, EPA, CDC, and other Federal agencies are designing the National Children's Study (NCS), a large longitudinal epidemiology study of children's exposure to environmental agents. The NCS will enroll 100,000 children during the mother's pregnancy and follow them throughout childhood and adolescence. This study on environmental influences on children's health and development was mandated in the Children's Health Act of 2000.

The National Center for Toxicological Research (NCTR) supports fundamental research on the effects of chemicals regulated by the Food and Drug Administration. Although some of the models used by NCTR may be similar to those used by EPA, the chemicals and regulatory context vary significantly. Historically, NCTR has been a leader in developing models and principles for risk assessment, which has led to collaborations between EPA and NCTR scientists.

EPA's Global Change Research Program is coordinated with the Committee on Climate Change Science and Technology Integration (CCCSTI). Through its participation in the Climate Change Science Program (CCSP), the Agency collaborates closely with other CCSP member agencies (*e.g.*, the National Oceanic and Atmospheric Administration's (NOAA's) Regional Integrated Science and Assessment Program), to ensure appropriate prioritization and efficiency, to avoid duplication, and to ensure consistently high standards of scientific review for all aspects of supported studies and analyses.

EPA and NICHD jointly sponsor research on genetic susceptibility and variability of human malformations. EPA's efforts in this area focus on identifying environmental agents that cause birth defects and other developmental disorders, the molecular mechanisms of birth defects, and how to use mechanistic and other data in the risk assessment process.

The National Cancer Institute's (NCI) Agricultural Health Study (AHS) is a large epidemiology study of cancer in farm workers and their families. EPA is participating in the AHS through an exposure study of a participant subgroup.

EPA coordinates with the other Federal agencies having health risk assessment expertise, including the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention, the Agency for Toxic Substances and Disease Registry (ATSDR), the National Science Foundation, and the National Institutes of Health. In the context of human health risk assessment, the purposes of these interactions are to enhance the quality of methods and approaches through exchange of perspectives and to coordinate and collaborate in future research efforts in support of human health risk assessment. The Agency also participates on several government-wide working groups on chemicals of mutual concern, including dioxin, ammonium perchlorate, trichloroethylene, and formaldehyde.

Research in ecosystems protection is coordinated government-wide through the Committee on Environment and Natural Resources (CENR). EPA is an active participant in the

ENR, and all work in this objective is fully consistent and complementary with other Committee member activities.

EPA researchers work within the CENR on EMAP and other ecosystems protection research. The Mid-Atlantic Landscape Atlas was developed in cooperation with NOAA, USFW, the University of Tennessee, and the U.S. Department of Energy's (DOE's) Oak Ridge National Laboratory. Development of the Networking and Information Technology Research & Development (NITR) Modeling System is coordinated with the Army Corps of Engineers (USACE), USDA, and DOE. EPA cooperates with the CENR's Subcommittee on Ecological Systems, in the restoration of habitats and species, impacts of landscape change, invasive species and inventory and monitoring programs. A draft Ecological Research Strategy underwent interagency peer review by the Committee on Environment and Natural Resources (CENR) in June 1997 and external peer review by the Science Advisory Board's Ecological Processes and Effects Committee (SAB-EPEC) in July 1997. The strategy was revised in response to SAB-EPEC suggestions and CENR comments, and the final document was published in June 1998.

EPA is working through interagency agreements with the USACE on the development of tools for the management of stressors in reservoir and lake watersheds and the establishment of an approach for the development of decision support systems to manage these types of ecosystems. Through interagency agreements with the U.S. Geological Survey (USGS), EPA has worked to investigate and develop tools for assessing the impact of hydrogeology on riparian restoration efforts. This work also focuses on development of tools for the dispersal modeling of invasive species, the evaluation of the effectiveness of restoration efforts to reconnect groundwater and surface water hydrology, and the establishment of zones of denitrification within impaired streams. The collaborative work with the USGS continues to play a vital role in investigating the impact and fate of atmospheric loadings of nitrogen and nitrogen applications as part of restoration technologies on terrestrial and aquatic ecosystems. All of these efforts have significant implications for risk management in watersheds, total maximum daily load (TMDL) implementation, and management of non-point source pollutants.

Additional interagency grants programs in Ecology include: the Ecology and Oceanography of Harmful Algal Blooms (EcoHAB) program with NOAA, NSF, DOD, and NASA, and nutrient science for watershed management with USDA.

The broad nature of the EDCs issue necessitates a coordinated effort on both the national and international levels. EPA has shown extensive leadership at both levels - chairing the Committee on Environment and Natural Resources (CENR) interagency working group and chairing a Steering Group on Endocrine Disruptors under the auspices of the International Programme on Chemical Safety/World Health Organization/Organization for Economic Cooperation and Development (IPCS/WHO/OECD). Due to the complex nature of the uncertainties posed by endocrine disrupting chemicals, the overlapping concerns of Federal agencies, and the resource constraints on the Federal budget, close coordination and cooperation among Federal agencies are essential to the resolution of critical research questions. While the CENR provides the umbrella for this coordination, individual agencies are responsible for the development of their own independent research plans.

Under EPA's leadership, an inventory of Federal research on endocrine disruption has been developed and is used to evaluate Federal efforts, identify research gaps and establish



priorities, and clarify governmental roles and responsibilities. Working with other nations, EPA has expanded the U.S. Federal inventory to include projects from Canada, Japan, and Europe and has turned it into a Global Endocrine Disruptors Research Inventory with close to 800 projects. The IPCS/WHO/OECD Steering Group on Endocrine Disruptors has developed a "Global State-of-the-Science Review" which was made available August 12, 2002. Both the inventory and the international assessment result from recommendations made at the 1997 G-8 Environmental Ministers' Meeting. In FY 2005, EPA will continue to collaborate with European countries under the U.S.-EU Science and Technology Agreement and with Japanese scientists under the U.S.-Japan Science and Technology Agreement.

Homeland Security research is conducted in collaboration with numerous agencies, enabling funding to be leveraged across multiple programs and producing synergistic results. EPA's National Homeland Security Research Center (NHSRC) works closely with the Department of Homeland Security to assure that EPA's efforts are directly supportive of DHS priorities. Utilizing experience gained from the management of ORD's Star Grant Program, EPA is also working with DHS to provide support and guidance to DHS in the startup of their University Centers of Excellence program. The Department of Defense organizations are primarily responsible for the production and control of military chemical agents, and EPA's National Homeland Security Research Center (NHSRC) works closely with the Edgewood Chemical and Biological Center (ECBC), the Army Research Laboratory, the Technical Support Working Group, the Army Corps of Engineers, and other Department of Defense organizations. In conducting biological agent research the NHSRC works closely with the Centers for Disease Control (CDC) as well as their military counterparts. The NHSRC works with the Department of Energy to access research conducted by DOE's National Laboratories as well as to obtain data related to radioactive materials. In addition to these major collaborations, the NHSRC has relationships with numerous other Federal Agencies including the Department of Homeland Security, the U.S. Air Force, Food and Drug Administration, and the National Institute of Standards and Technology. Also, the NHSRC is working with state and local emergency response personnel to better understand their needs and build relationships, which will enable the quick deployment of NHSRC products.

## Environmental Protection Agency

### FY 2005 Annual Performance Plan and Congressional Justification

#### HEALTHY COMMUNITIES AND ECOSYSTEMS

Brownfields, IV-3, IV-8, IV-9, IV-12, IV-16, IV-80, IV-81, IV-82, IV-85, IV-86, IV-87, IV-88, IV-95, IV-96, IV-97, IV-99, IV-101

Brownfields Projects, IV-80, IV-86

Categorical Grant

- Brownfields, IV-80, IV-82
- Lead, IV-22
- Pesticides Program Implementation, IV-22
- Targeted Watersheds, IV-103
- Wetlands Program Development, IV-103

Children and other Sensitive Populations, IV-22, IV-80

Commission for Environmental Cooperation, IV-22, IV-80, IV-81, IV-83

Congressionally Mandated Projects, IV-22, IV-80, IV-103, IV-134

Endocrine Disruptors, IV-14, IV-134, IV-135, IV-157, IV-174, IV-175

Environment and Trade, IV-80, IV-83, IV-84

Environmental Education, IV-102

Environmental Justice, IV-3, IV-4, IV-80, IV-84, IV-85, IV-86, IV-94

Geographic Program

- Chesapeake Bay, IV-103
- Great Lakes, IV-103
- Gulf of Mexico, IV-103
- Lake Champlain, IV-103
- Long Island Sound, IV-103
- Other, IV-80, IV-103

Great Lakes Legacy Act, IV-103, IV-107, IV-110

Homeland Security

- Preparedness, Response, and Recovery, IV-22, IV-134, IV-159

Human Health Risk Assessment, IV-134, IV-139, IV-154

Infrastructure Assistance

- Mexico Border, IV-80

International Capacity Building, IV-23, IV-94

Mexican Border, IV-2, IV-7, IV-88, IV-99

National Estuary Program / Coastal Waterways, IV-103

Pesticides

- Field Programs, IV-22
- Registration of New Pesticides, IV-22
- Review / Reregistration of Existing Pesticides, IV-22

POPs Implementation, IV-22, IV-53

Regional Geographic Initiatives, IV-80, IV-103

Regulatory Innovation, IV-80, IV-89

Research

- Computational Toxicology, IV-134
- Endocrine Disruptor, IV-134, IV-156
- Fellowships, IV-134, IV-158
- Global Change, IV-134
- Human Health and Ecosystems, IV-134, IV-139
- Pesticides and Toxics, IV-134

Science Advisory Board, IV-4, IV-9, IV-45, IV-71, IV-72, IV-144, IV-158, IV-160, IV-174

Science Policy and Biotechnology, IV-134, IV-136

State and Local Prevention and Preparedness, IV-22, IV-55

Toxic Substances

- Chemical Risk Management, IV-22
- Chemical Risk Review and Reduction, IV-22, IV-36

TRI / Right to Know, IV-23

US Mexico Border, IV-80

Wetlands, IV-3, IV-103, IV-105, IV-106, IV-112, IV-115, IV-131, IV-132, IV-133