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Washington, DC 20548

Resources, Community, and  
Economic Development Division

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August 31, 2000

The Honorable F. James Sensenbrenner, Jr.  
Chairman, Committee on Science  
House of Representatives

Subject: Government Performance and Results Act: Information on Science Issues in EPA's Performance Report for Fiscal Year 1999 and Performance Plans for Fiscal Years 2000 and 2001

Under the Government Performance and Results Act (GPRA) of 1993, the Environmental Protection Agency (EPA) published a 5-year strategic plan in 1997. The plan established 10 strategic goals to serve as a framework for EPA's planning and resource allocation decisions. Since fiscal year 1999, EPA has also issued annual performance plans that set annual performance goals to provide a direct link between the agency's strategic goals and its day-to-day activities. EPA issued its performance plan for fiscal year 2001 in February 2000. GPRA further requires annual performance reports on the degree to which annual goals were met. In March 2000, EPA issued its first performance report, which described the progress the agency made in achieving its fiscal year 1999 goals. EPA's revised strategic plan for fiscal years 2000-2005 is due September 29, 2000, and the agency has made a June 2000 draft for the revised plan available to the Congress and other interested parties for comment and consultation.

To facilitate your review and oversight of EPA's science programs, you asked us to review selected science programs and provide you with information on (1) whether EPA links science issues in its performance report for fiscal year 1999 with performance plans for fiscal years 2000 and 2001 and whether the agency's funding request for fiscal year 2001 is linked to specific science activities in its performance plan for that year, (2) whether EPA's performance plan for fiscal year 2001 addresses weaknesses in the agency's science program that we previously identified, and (3) the extent to which EPA's draft strategic plan for fiscal years 2000-2005 complies with GPRA's requirements. To address our objectives, we focused on EPA's sound science, climate change, and waste management programs that have major science components.

## **Science Activities Are Generally Linked in EPA's Performance Report, Plans, and Budget Request**

EPA generally links the science activities in its performance report for fiscal year 1999, performance plans for fiscal years 2000 and 2001, and budget request for fiscal year 2001. In each of these documents, EPA explains the purpose of its research and how it expects the results to contribute to its strategic objectives. Where appropriate, EPA also links its science goals across fiscal years. For example, in fiscal year 1999, EPA finished the first stage of an ecological monitoring system for the Mid-Atlantic Region that it planned to eventually expand to other regions. EPA's performance plan for fiscal year 2000 contains a goal to report on the monitoring findings in the Mid-Atlantic Region and the cost-effectiveness of the monitoring system. EPA's follow-on goal shown in the performance plan for fiscal year 2001 is to expand the scope of this research to establish baseline data for estuaries nationwide. According to EPA, these data will allow the agency to evaluate the effects of environmental management policies on a national and regional basis. (Enc. I lists EPA's performance goals for science for fiscal years 1999 through 2001.)

EPA's performance plan for fiscal year 2001 is generally linked to its science activities in its budget justification for that year. As result of EPA's decision to combine the performance plan with its budget justification, the agency now shows how much it is requesting for each strategic science objective and the objective's supporting performance goals. For each objective, EPA has included tables that detail some of the requested amounts by key programs. For example, under the objective "Increase Use of Integrated, Holistic, Partnership Approaches" in the budget justification for fiscal year 2001, EPA indicates that the \$17.1 million requested for the objective is divided between two key programs: the "Innovative Community Partnership Program" and the "Regional Geographic Program." However, EPA's budget request does not always provide the total amounts requested for all activities under each of its strategic objectives. For example, EPA requested \$115 million for its "Research for Ecosystem Assessment and Restoration" strategic objective. However, the budget request identifies specific activities for only about \$52 million, or 45 percent, of the \$115 million requested.<sup>1</sup>

### **EPA Partially Addresses Weaknesses That We Previously Identified**

We have identified several weaknesses in EPA's science programs over the years, including (1) the uneven implementation of peer review procedures for EPA's scientific and technical products, (2) gaps in scientific data, and (3) the lack of performance goals and measures that show the environmental results of EPA's

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<sup>1</sup>See *Environmental Protection Agency: Comparing Annual Budgets for Science and Technology* (GAO/T-RCED-00-132, Mar. 23, 2000).

science activities. EPA partially addresses these weaknesses in its performance plan for fiscal year 2001.

In 1996, we reported on the uneven implementation of EPA's policy for peer reviews—the critical evaluations of scientific and technical work products by independent experts. In addition, we reported on the need for EPA to educate all staff about the merits of, and procedures for, conducting peer reviews.<sup>2</sup> Although EPA's performance plan does not include goals for improving peer reviews, the plan does discuss the actions that were taken in response to our findings. For example, EPA issued a *Peer Review Handbook*, which provides guidance on implementing peer reviews agencywide. Nonetheless, the National Research Council of the American Academy of Sciences and EPA's Science Advisory Board believe that further improvements are needed to expand the scope of peer reviews and make them more independent.<sup>3</sup> For example, these groups have said that project managers for work products should no longer be allowed to lead peer reviews of these products. However, EPA's performance plan for fiscal year 2001 does not address this or other peer review issues.

In September 1999, we reported that EPA lacks fundamental environmental and scientific data about pollutants and their effects on human health and the environment. For example, EPA lacks toxicity data for more than one-third of the chemicals produced in large volumes.<sup>4</sup> EPA established the Office of Environmental Information in October 1999 to, among other things, fill significant gaps in the agency's data. Although EPA has not established performance goals or measures for environmental or scientific data improvements, the agency's draft strategic plan for fiscal years 2000-2005 includes a strategic goal for its information activities called "Quality Environmental Information." According to EPA, beginning with fiscal year 2002, the agency's performance plan will contain specific outcome-oriented goals and measures for its initiatives to improve the quality of its information.

In an April 2000 review of EPA's performance plan for fiscal year 2000, we found that no performance goals, and only one performance measure showing changes in environmental conditions, had been established for EPA's research and development activities.<sup>5</sup> Under this measure, a 30-percent cumulative reduction in a variety of emissions, including toxic chemicals and volatile organic compounds, was to result from the introduction of various environmental strategies. Officials of EPA's Office of Research and Development told us that its

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<sup>2</sup>See *Peer Review: EPA's Implementation Remains Uneven* (GAO/RCED-96-236, Sept. 24, 1996).

<sup>3</sup>See *Strengthening Science at the U.S. Environmental Protection Agency: Research Management and Peer Review Practices*, National Research Council (draft report, 2000) and *An SAB Report: Review of the Peer Review Program of the Environmental Protection Agency* (EPA-SAB-RSAC-00-002, Nov. 1999).

<sup>4</sup>See *Environmental Information: EPA Is Taking Steps to Improve Information Management, but Challenges Remain* (GAO/RCED-99-261, Sept. 17, 1999).

<sup>5</sup>See *Managing for Results: EPA Faces Challenges in Developing Results-Oriented Performance Goals and Measures* (GAO/RCED-00-77, Apr. 28, 2000).

activities provide scientific and engineering information, models, methods, and tools. The officials further stated that specific changes in pollutant levels generally cannot be tied to its activities in a quantifiable manner. These officials also noted that the models, methods, and tools are inputs to the development of environmental regulations and policies, and frequently advance the state environmental science, thereby better enabling EPA to achieve its environmental outcomes. While EPA officials state that it is inherently difficult to link research activities to specific environmental outcomes, other measures can be used to measure the results of these activities. For example, EPA's Science Advisory Board has recommended that goals for science activities should concentrate on *outcomes*—in terms of improved understanding of the environment—rather than *outputs*, such as data collected and reports issued.<sup>6</sup>

### **EPA's Draft Strategic Plan Generally Complies With the Results Act, but Several Areas Could Be Improved**

EPA's June 2000 draft strategic plan for fiscal years 2000-2005 generally complies with the GPRA requirements that such plans include a mission statement, long-term strategic goals, strategies for achieving the strategic goals, linkage between long-term strategic goals and annual performance goals, and a description of the program evaluations used in establishing or revising performance goals. In addition, EPA's draft plan contains information on the functions that crosscut those of other agencies, as suggested by the Office of Management and Budget's (OMB) guidance. However, EPA could improve several areas of its draft strategic plan for fiscal years 2000-2005.

- In the 1997 strategic plan, EPA elaborated on its mission statement with a series of purpose statements. The statements were provided to clarify the scope of EPA's mission. By including such purpose statements in the draft strategic plan, EPA would focus the mission statement more directly on the agency's core activities.
- EPA's discussion of human capital requirements for meeting its strategic objectives could be more comprehensive. Under its "Effective Management" strategic goal, EPA states that managing human capital will be a key priority. EPA notes that it will work hard to "secure, develop, empower, and retain talented people" through such efforts as workforce planning and training. The only other substantive discussion of human capital requirements is under EPA's strategic goal for "Quality Environmental Information." EPA states that staff resources for environmental information activities will be a critical factor affecting its success under this goal. However, EPA does not discuss any means or strategies for addressing this goal.

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<sup>6</sup>See *An SAB Report: Review of the FY 2001 Presidential Science and Technology Budget Request for the Environmental Protection Agency* (EPA-SAB-RSAC-00-007, Mar. 17, 2000).

- Program evaluations are an essential element of performance management. EPA's draft plan identifies previous or ongoing evaluations for each of its strategic goals. However, EPA's discussion of future evaluations was limited to its "Clean and Safe Water" strategic goal, for which it listed three potential program evaluations. Providing additional details on future evaluations of other strategic goals would bring the discussion more in line with GPRA's requirements.
- EPA's draft strategic plan could be made more informative if it provided information on how EPA's goals complement or supplement those of other agencies, such as the Departments of Health and Human Services, Agriculture, and the Interior. EPA's 1997 strategic plan included a matrix that gave a "bird's eye view" of the extent to which EPA's goals were interrelated with those of other agencies. By including such information in its draft plan, EPA would provide perspective on its contribution to federal efforts to improve health and environmental conditions.

(Enc. II contains additional observations on the draft strategic plan.)

### **Agency Comments and Our Evaluation**

We provided EPA with a draft of this report for review and comment. EPA officials, including the Director of the Planning Staff, Office of Planning, Analysis, and Accountability, informed us that they generally agreed with the information presented in the draft report. However, the officials wanted to emphasize two revisions that EPA is making to its draft strategic plan for June 2000. First, they told us that EPA's final strategic plan will include an expanded discussion of the agency's human capital activities and will provide a matrix showing the extent to which its strategic goals are interrelated with those of other agencies.

Second, concerning program evaluations, EPA officials said that the agency has created the Office of Program Evaluation within EPA's Office of the Inspector General and the Evaluation Support Division to support and advocate agencywide evaluation activities. They also said that the agency will revise its draft strategic plan to identify information on additional ongoing program evaluations. However, EPA did not clarify how it intends to meet GPRA's and OMB's requirements that it identify future program evaluations for each strategic goal.

EPA officials said that they will not include statements of purpose in the strategic plan as we suggested in our draft report because the statements would duplicate other information. While we believe that providing statements of purpose in a prominent, central place would be useful to the reader, we recognize that such statements, which are not required by GPRA or OMB, are at EPA's discretion.

The EPA officials also provided technical clarifications, which were incorporated into the report, as appropriate.

### **Scope and Methodology**

To address our objectives, we focused on EPA's sound science, climate change, and waste management programs that have major science components. We reviewed GPRA and OMB's Circular A-11, which provide criteria for strategic plans, annual performance plans, and performance reports. We reviewed EPA's performance report for fiscal year 1999, performance plans for fiscal years 2000 and 2001, and June 2000 draft strategic plan for 2000-2005. We also analyzed EPA's research strategy documents and reviewed our reports on EPA's science programs and performance planning activities. We conducted our review from July through August 2000 in accordance with generally accepted government auditing standards.

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As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report for 30 days from the date of this report. At that time, we will send a copy to the Honorable Carol M. Browner, Administrator, EPA, and will make copies available to others on request. If you or your staff have any questions about this report, please call me at (202) 512-6111. Key contributors to this report were Ed Kratzer, Ralph Running, Rosemary Torres-Lerma, and Bernice Dawson.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'P. Guerrero', with a long horizontal flourish extending to the right.

Peter F. Guerrero  
Director, Environmental  
Protection Issues

Enclosures - 2

Enclosure I

**EPA’s Science Performance Goals for Fiscal Years 1999 Through 2001**

Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
1	Identify and evaluate at least two plausible biological mechanisms by which particulate matter causes death and disease in humans.	In fiscal year 1999, the Environmental Protection Agency (EPA) identified and evaluated two plausible biological mechanisms by which particulate matter causes death and disease in humans.	Provide new information on the atmospheric concentrations, human exposure, and health effects of particulate matter, including particulate matter (PM) 2.5, and incorporate it and other peer-reviewed research findings in the second External Review Draft of the PM Air Quality Criteria Document for National Ambient Air Quality Standards review.	Provide new information on the atmospheric concentrations of, human exposure to, health effects of, and mechanisms of toxicity of particulate matter, and facilitate PM National Ambient Air Quality Standards through Air Quality Criteria Document development and consultation.
1	Complete health assessments for five air toxics to be indicated as high priority by EPA and its regional offices.	In fiscal year 1999, the research program completed health assessments for four high-priority air toxics—one short of the five assessments that were planned.	Provide methods to estimate human exposure and health effects from high-priority urban air toxics and complete health assessments for the highest-priority hazardous pollutants, including fuel/fuel additives.	Provide new information and methods to estimate human exposure to and health effects from high-priority urban air toxics, and complete health assessments for the highest-priority hazardous air pollutants, including fuel/fuel additives.
1	None <sup>b</sup>	Not applicable	Develop tropospheric ozone precursor measurement methods, emissions information to guide State Implementation Plan’s (SIP) development under the current national ambient air quality standards (NAAQS) for ozone.	Develop tropospheric ozone precursor measurement methods, emissions-based air quality models, observation-based modeling methods, and source emissions information to guide SIPs’ development under the current NAAQS.

<sup>a</sup>EPA discussed only the goals that it identified as being the “vital few” for congressional reporting purposes for its performance report for fiscal year 1999. However, to provide a complete picture, we have listed all of EPA’s performance goals for science in the table.

<sup>b</sup>“None” indicates that there is no related goal.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
1	Evaluate Models-3/Community Multi-Scale Air Quality against filed data to demonstrate reliability in NAAQS for ozone.	Not applicable	Provide new information on the atmospheric concentrations of, human exposure to, and health and environmental effects of tropospheric ozone and incorporate it and other peer-reviewed research findings in and External Review Draft of the Ozone Air Quality Criteria Document for NAAQS review.	Develop Air Quality Criteria Documents for tropospheric ozone, nitrogen oxide, and sulfur dioxide through planning, development, and consultation.
1	Complete preliminary evaluations of Models-3/Community Multi-Scale Air Quality for PM to demonstrate reliability NAAQS attainment planning for PM.	Not applicable	Develop PM measurements, methods, emissions-based air quality models, and source emissions and control information to guide development of SIPs under the current PM NAAQS.	Provide new information on particulate matter source emissions, measurements, methods, and emissions-based air quality models to guide development of SIPs under the PM NAAQS.
1	Develop a preliminary urban scale Models-3/Toxics Model for community-based human exposure assessment for air toxics having known emissions and air chemistry.	Not applicable	Develop (1) an air quality model incorporating air toxics, as their air chemistry and emissions become known and (2) source emissions and control information for both mobile and stationary sources to guide cost-effective risk management options.	Develop (1) and air quality model incorporating air toxics, as their air chemistry and emissions become known and (2) source emissions and control information for both mobile and stationary sources to guide cost-effective risk management.
2	EPA will develop critical dose-response data for disinfectant by-products, waterborne pathogens, and arsenic for addressing key uncertainties in the risk assessment of municipal water supplies.	In fiscal year 1999, EPA met its goal of developing dose-response information on disinfectant byproducts, waterborne pathogens, and arsenic for characterizing potential exposure risks from consuming drinking water.	Reduce uncertainties and improve methods associated with the evaluation and control of risks posed by exposure to disinfection by-products in drinking water.	None



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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
2	None	Not applicable	Reduce uncertainties and improve methods associated with the evaluation and control of risks posed by exposure to microbial contaminants in drinking water.	Reduce uncertainties and improve methods associated with the assessment and control of risks posed by exposure to microbial contaminants in drinking water with a focus on the emerging pathogens on the Contaminant Candidate List.
2	By 2003: Deliver support tools, such as watershed models, enabling resource planners to select consistent, appropriate watershed management solutions and alternative, less costly wet-weather flow control techniques.	In fiscal year 1999, EPA continued efforts to deliver support tools, such as watershed models, which enable resource planners to select consistent and appropriate watershed management solutions and alternatives as well as costly wet-weather flow technologies. EPA is making progress toward this goal in 2003, which it expects to reach.	Develop modeling, monitoring, and risk management methods that enable planners and regulatory officials to more accurately characterize receiving and recreational water quality and to select appropriate control technologies.	None
2	EPA will provide data and information for use by states and regions in assessing and managing aquatic stressors in the watershed to reduce toxic loadings and improve ecological risk assessment.	In fiscal year 1999, EPA provided data and information for use by states and its regional offices in assessing and managing aquatic stressors in watersheds to reduce toxic loadings and improve ecological risk assessment.	<p>Develop the scientific rationale for numerical criteria for surface waters.</p> <p>Develop a conceptual framework for the diagnosis and assessment of water quality impairment in U.S. watersheds.</p> <p>Identify the primary life support functions of surface waters that contribute to the management and sustainability of watersheds.</p>	Develop the framework for diagnosing adverse chemical pollutants in surface waters.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
3	None	Not applicable	Provide methodologies to evaluate the risk to human health posed by food-use products.	Develop pesticides exposure and effects data, risk assessment methods and models for children, and control technologies needed to comply with the requirements of the Food Quality and Protection Act.
4	Improve in vitro screening methods for one-electron mechanisms of toxicity among industrial chemicals.	Not applicable	Provide methods and models to evaluate the impact of environmental stressors on human health and ecological end points for use in guidelines, assessments, and strategies.	Develop exposure data, health risk assessment methodologies, and control technologies to improve the characterization of health risks and reduce community exposures to environmental chemical stressors.
5	Demonstrate and verify the performance of 18 innovative technologies by 2001, emphasizing remediation and characterization of groundwater and soils.	In fiscal year 1999, work under the program proceeded according to schedule to meet the 2001 targets, as EPA completed demonstrations of seven innovative technologies through partnerships with the private sector and other government agencies.	Enhance scientifically defensible decisions for site cleanup by providing targeted research and technical support.	Provide technical information to support scientifically defensible and cost-effective decisions for cleaning up complex sites, hard-to-treat wastes, mining, oil spills near shorelines, and brownfields to reduce risk to human health and the environment.
5	Complete prototype model for assessing cumulative exposure-risk assessments integrating the environmental impact of multiple chemicals through multiple media and pathways.	In fiscal year 1999, EPA completed a test version of a cumulative exposure model that integrates the environmental impact of multiple chemicals through multiple media and pathways.	Enhance scientifically defensible decisions for active management of wastes, including combustion, by providing targeted research and technical support.	Provide technical information to support Resource Conservation and Recovery Act regulatory development for waste identification, containment, and combustion.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
6	Conduct preliminary assessment of the consequences of climate change at three geographical locations: (Mid-Atlantic, Gulf Coast, and upper Great Lakes).	EPA completed the Mid-Atlantic and Great Lakes regional assessments as well as the human health sectorial assessments on schedule in fiscal year 1999, but the Gulf Coast regional assessment is behind schedule because of difficulties in obtaining a high-quality project proposal able to pass rigorous scientific peer review.	Assess the consequences of global change and climate variability at a regional scale.	Assess the consequences of global change (particularly climate change and climate variability) on human health and ecosystems.
7	By 1999, complete five to seven monitoring pilot projects in environmental monitoring for public access and community tracking (EMPACT) cities.	During fiscal year 1999, EPA awarded eight grants to local communities for innovative monitoring research pilot projects, exceeding the agency's goal of five to seven pilot projects for the program.	By fiscal year 2000, 75 percent of EMPACT communities have in place, or have initiated, community-based strategies for time-relevant environmental monitoring, information management, and communication that will result in sustained community capacity to deliver timely environmental information. <sup>c</sup>	None
7	Publish guidelines for Carcinogenic Risk Assessment, Neurotoxicity Risk Assessment, and a technical report on the health risk assessment of chemical mixtures.	Not applicable	Develop data interpretation tools and risk communication tools to provide the public and environmental communities with time-relevant information.	Provide guidance for risk assessment to improve the scientific basis of environmental decision-making.

<sup>c</sup>The goal for fiscal year 2000 is no longer considered a research and development activity and has been transferred to the Office of Environmental Information.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
8	Complete and evaluate a multitiered ecological monitoring system for the Mid-Atlantic region and provide select land cover and aquatic indicators for measuring status and trends.	In fiscal year 1999, EPA completed the first stage of the Environmental Monitoring and Assessment Program (EMAP) effort in support of the agency's fiscal year 2001 commitment to complete and evaluate a multitiered ecological monitoring system for the Mid-Atlantic region and provide select land cover and aquatic indicators for measuring status and trends.	<p>Report on monitoring findings in the Mid-Atlantic region as a cost-effective means of measuring the condition of these systems.</p> <p>Develop monitoring designs, including indicators, for streams in western watershed.</p> <p>Develop monitoring designs for national coastal monitoring.</p>	Establish baseline conditions from which changes and, ultimately trends, in the ecological conditions of the nation's estuaries can be confidently documented and from which results of environmental management policies can be evaluated at regional scales.
8	None	Not applicable	Publish a conceptual model for developing watershed assessment techniques that would assist local, regional, and national environmental decisionmakers in maintaining the ecological integrity of the watershed.	None
8	Analyze existing monitoring data for acid deposition and ultraviolet radiation-B (UVB) and implement a multiple site UVB monitoring system for measuring status and trends.	EPA performed several prototype analyses addressing wet and dry deposition trends of sulfur and nitrogen to meet the agency's fiscal year 1999 commitment to analyze existing monitoring data for acid deposition.	None	None
8	Provide ecological risk assessment case studies for two watersheds, final guidelines for reporting ecological risk assessment, and ecological risk assessment guidance and support.	In fiscal year 1999, EPA provided ecological risk assessment case studies for two watersheds, final guidelines for reporting ecological risk assessment, and ecological risk assessment guidance and support.	None	Develop methods for regional scale, comparative risk/vulnerability assessment using the Mid-Atlantic as a case study.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
8	Develop and verify innovative methods and models for assessing the susceptibilities of populations to environmental agents aimed at enhancing risk assessment and management strategies and guidelines.	EPA also made significant progress in fiscal year 1999 toward meeting its long-term goal of developing and verifying innovative methods and models for assessing the susceptibilities of populations to environmental agents.	None	None
8	Complete and submit an external review draft of the Air Quality Criteria Document for carbon monoxide.	Not applicable	None	None
8	Initiate field exposure study of children to two endocrine-disrupting chemicals.	EPA completed a protocol for a field study of children exposed to two endocrine-disrupting chemicals.	Develop tools to identify hazards and formulate strategies to manage risks from exposure to endocrine-disrupting chemicals capable of inducing adverse effects in humans and wildlife.	None
8	Improve computational efficiency of the fine particulate matter model by 25 percent.	EPA finished work on the air component of the Multimedia Integrated Modeling System and met its fiscal year 1999 goal of improving computational efficiency in the analysis of particulate matter by 25 percent.	None	None

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>a</sup>	Performance plan for FY 2000	Performance plan for FY 2001
8	None	Not applicable	Develop risk assessment guidance and regional assessments concerning risks to children exposed to environmental contaminants.	Implement completed Human Health Risk Assessment Research Strategy focusing on research to improve extrapolation, cumulative and aggregate risks, mixtures, susceptible populations, harmonization of cancerous and noncancerous risk assessments, and evaluating the effectiveness of public health decisions.
8	<p>Produce first-generation exposure models describing residential exposure to pesticides.</p> <p>Produce a first-generation chlorpyrifos/pesticide exposure model and a technical report on children's activities associated with potentially high exposures.</p>	In fiscal year 1999, EPA produced a first-generation model that can be used in a prospective context to provide reliable assessments of the potential risks to human populations posed by exposure to pesticides and other toxic chemicals.	Develop initial measurements, methods, and models to evaluate exposures and effects of environmental contaminants, particularly in children.	Develop initial measurements, methods, and models to evaluate exposures and effects of environmental contaminants, particularly in children.
8	None	Not applicable	Initiate a research program to address the most pressing issues related to the prevention, control, and elimination of mercury as a human health and environmental problem.	Provide recommendations both about revising, if needed, EPA's reference dose for methylmercury and for managing risks from environmental exposures to mercury.

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Strategic goal	Performance plan for FY 1999	Performance report for FY 1999 <sup>d</sup>	Performance plan for FY 2000	Performance plan for FY 2001
8	None	Not applicable	<p>Provide decision-support tools and methods that can be applied to determine the value and costs of solutions to environmental problems, and develop partnerships to assist in the application of these tools and methods to community-based environmental programs, including tribal partners.</p> <p>Complete the development of one or more computer-based tools that simulate product, process, or system design changes, and complete proof-of-process structure for one or more generic technologies (apply to more than one environmental problem) to prevent or reduce pollution in chemicals and industrial processes.</p>	<p>Prepare and deliver pollution prevention tools and methodologies for multiple economic sectors in order to enhance a preventive approach to risk management and advance the use of pollution prevention and sustainable development.</p>
8	Use of a pilot program to verify environmental technologies.	Not applicable	Use of a pilot program to verify environmental technologies.	<p>Develop, evaluate, and deliver technologies and approaches that eliminate, minimize, or control high-risk pollutants from multiple sectors. Emphasis will be placed on preventive approaches for industries and communities having difficulty meeting control/emission/effluent standards.</p>

<sup>d</sup>EPA discussed only the goals that it identified as being the “vital few” for congressional reporting purposes for its performance report for fiscal year 1999. However, to provide a complete picture, we have listed all of EPA’s performance goals for science in the table.

## **GAO's Observations on EPA's Draft 2000 Strategic Plan**

The Government Performance and Results Act (GPRA) required each federal agency to develop, by the end of fiscal year 1997, a strategic plan covering at least a 5-year period. The act stipulated that each plan should state the agency's mission, identify long-term strategic goals, and describe how the agency intends to achieve these goals through its activities and human capital, information, and other resources. Agencies are required to update their plans as least every 3 years. The Environmental Protection Agency (EPA) issued its strategic plan in September 1997 and plans to issue its revised plan by September 29, 2000. The agency has made the revised plan available to the Congress and other interested parties for comment and consultation.

EPA's 2000 draft strategic plan complies with GPRA's requirements and/or guidance provided by the Office of Management and Budget (OMB) for (1) a mission statement, (2) long-term strategic goals, (3) strategies for achieving the strategic goals, (4) a linkage between the agency's long-term strategic goals and annual performance plans, (5) the identification of those key external factors that could significantly affect EPA's ability to achieve its strategic goals, (6) a description of program evaluations used in establishing or revising the goals, and (7) references to the roles and responsibilities of other agencies.

### **Mission Statement**

GPRA mandates a "comprehensive mission statement covering the major functions and operations of the agency." OMB's guidance states that a mission statement should be brief, defining the agency's basic purpose, with particular emphasis on its core programs and activities.

EPA's draft strategic plan states that the agency's mission is "to protect human health, and to safeguard the natural environment—air, water, and land—upon which life depends." The draft plan's overarching statement is general but states concisely what EPA is broadly charged with doing under its statutes. In its 1997 Strategic Plan, EPA elaborated on its mission statement with a series of purpose statements that provided a clear picture of the scope of the agency's mission. Such statements are not included in the draft strategic plan. The mission statement could be improved by including such statements, which would focus the mission statement more directly on the agency's core activities.

### **Goals and Objectives**

Under GPRA, an agency's strategic plan must describe the general goals and objectives, including outcome-related goals and objectives, for the major functions and operations of the agency. These goals should explain what results are expected from the agency's major functions and when to expect those results.

EPA's plan identifies 10 goals, which have multiple objectives. The goals are generally outcome-oriented and measurable and are developed along the same lines as EPA's statutory requirements and organizational structure. Likewise, EPA's strategic goals are linked to objectives that, for the most part, are outcome-oriented. Such objectives should encourage EPA to focus more attention on performance goals and measures based on *outcomes* (results), rather than *outputs* (activities and processes).



However, as we stated in our September 1999 report on EPA's information management,<sup>1</sup> getting the data needed to measure progress toward the objectives will remain a challenge for EPA. Under goal 7 (Quality Environmental Information), EPA discusses the importance of enhancing the quality of its data by developing integrated data systems. EPA also states that it will set annual performance goals and measures to gauge its progress toward this goal. This would demonstrate the agency's commitment to hold itself accountable for obtaining the data needed to manage for results.

### **Achieving Goals and Objectives**

Under GPRA, an agency's strategic plan must address how the goals and objectives are to be achieved, including a description of the operational processes; skills and technology; and human capital, information, and other resources required to meet those goals and objectives.

For each goal, the plan has sections on the importance of the goal, the objectives of the goal, the results they intend to achieve over the next several years, and the means and strategies to achieve these goals. However, EPA's discussion of human capital requirements for meeting its strategic goals and objectives could be more comprehensive. Under goal 10 (Effective Management), EPA states that managing human capital will be a key priority. The agency notes that it will work hard to "secure, develop, empower, and retain talented people" through efforts such as workforce planning and training. The only other substantive discussion of human capital requirements is under goal 7 (Quality Environmental Information). In the draft strategic plan, EPA states that staff resources for environmental information will be a critical factor affecting its success under this goal. EPA also notes that it is important to address the challenge of recruiting and retaining skilled information and technology personnel. However, EPA does not discuss any means or strategies for addressing this challenge.

### **Relationships Between Long-Term Strategic and Annual Performance Goals**

GPRA requires that an agency's strategic plan contain a description of how the performance goals included in its annual performance plans relate to the general goals and objectives of the strategic plan. OMB directs that the strategic plan should briefly outline (1) the type, nature, and scope of the performance goals to be included in a performance plan; (2) the relationship between the performance goals and the general goals and objectives; and (3) the relevance and use of performance goals in helping determine the achievement of general goals and objectives.

Each goal in EPA's draft strategic plan has a section entitled "Relating Annual Performance Goals to Strategic Objectives." The information in these sections generally conforms to the GPRA requirements and OMB Circular A-11. For example, under goal 5 (Better Waste Management and Restoration of Contaminated Waste Sites, and Emergency Response), EPA discusses the general type, nature, and scope of the performance goals and their relationship to the strategic goal and objectives. The plan also gives examples of performance goals to be used

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<sup>1</sup>*Environmental Information: EPA Is Taking Steps to Improve Information Management, but Challenges Remain* (GAO/RCED-99-261, Sept. 17, 1999).

to measure progress, such as the number of contaminated sites cleaned up and the number of hazardous waste sites with controls in place to prevent dangerous releases.

### **Key External Factors**

GPRA requires that a strategic plan identify factors external to the agency and beyond the agency's control that could significantly affect the achievement of goals and objectives. OMB's guidance directs the agencies to identify each key external factor, indicate how it is linked with a particular goal, and describe how each factor may affect the accomplishment of the goal.

With the exception of goal 10 (Effective Management), EPA's draft strategic plan identifies external factors that could affect the achievement of goals and measures. For example, under goal 9 (A Credible Deterrent to Pollution and Greater Compliance With the Law), EPA states that its projected performance would be affected by natural catastrophes, such as major floods or significant oil spills. Such disasters would require a redirection of resources to address immediate environmental threats.

### **Program Evaluation**

GPRA requires that strategic plans describe the program evaluations used in establishing or revising goals and objectives with a schedule of future program evaluations. The act defines program evaluations as assessments, through objective measurement and systematic analysis, of the manner and extent to which federal programs achieve intended objectives. According to OMB's guidance, the schedule of future program evaluations should outline the general methodology to be used.

EPA's draft strategic plan identified some means of evaluating for each of the agency's 10 goals. The discussion included GAO reviews, peer review, cost-benefit analyses, and internal evaluations of regional, state, and tribal performance. However, the discussion focused on past or ongoing evaluations. EPA's discussion of future evaluations was limited to goal 2 (Clean and Safe Water), for which, EPA listed three potential future program evaluations. Providing information on future program evaluations would bring the discussion more in line with GPRA's requirements.

### **Crosscutting Functions**

Consistent with OMB's guidance, agencies' strategic plans should reflect program goals that crosscut those of other agencies. Likewise, the agencies should coordinate among themselves to ensure that information is shared and duplication is eliminated.

EPA's draft strategic plan, in discussing strategies and external factors, includes references to the roles and responsibilities of other agencies. For example, under goal 6 (Reduction of Global and Cross-Border Environmental Risks), EPA states that it is working with the Department of State, the National Oceanic and Atmospheric Administration, and other federal agencies to negotiate and implement legally binding, multilateral agreements that address significant sources of marine pollution. The plan also devotes a chapter to six cross-agency programs that promote partnerships with states and tribes and enlist the efforts of others outside EPA. For example, the

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plan discusses its state partnerships with the National Environmental Performance Partnership System and the Environmental Council of States.

While EPA addresses crosscutting efforts, the discussion does not provide a complete picture of how its goals complement or supplement those of other agencies that share responsibilities with EPA. For example, the Department of Health and Human Services has responsibilities for protecting human health, and the Departments of Agriculture and the Interior have responsibilities for protecting the environment. In its 1997 Strategic Plan, EPA included a matrix showing how the programs of these and other agencies intersected with EPA's programs. Although it did not provide detailed information, the matrix gave a bird's eye view of the extent to which other agencies had goals related to EPA's. Providing such information in its revised plan would provide a perspective on EPA's contribution to federal efforts to improve health and environmental conditions.

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