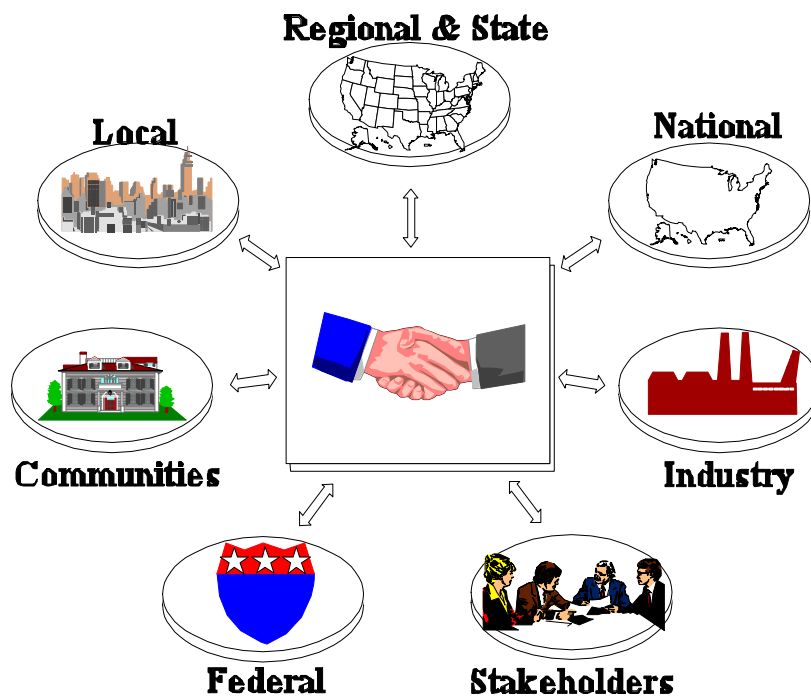




MANAGING INFORMATION AS A STRATEGIC RESOURCE:



**Final Report And
Recommendations Of The
Information Impacts Committee
The National Advisory Council For
Environmental Policy and
Technology (NACEPT)**

United States Office of
Environmental Protection The Administrator
Agency (1601F)

EPA 100-R-98-002
January, 1998

NOTICE

This report and set of recommendations have been written as part of the activities of the National Advisory Council for Environmental Policy and Technology (NACEPT), a public advisory committee providing extramural policy information and advice to the Environmental Protection Agency's Administrator and other officials of the EPA. The Council is structured to provide balanced, expert assessment of policy matters related to the effectiveness of the environmental programs of the United States. This report has not been reviewed for approval by the EPA and, hence, the contents of this report, and its recommendations, do not necessarily represent the views and policies of the EPA, nor of other agencies in the Executive Branch of the federal government, nor does mention of trade names, companies, or commercial products constitute a recommendation or endorsement for use.

ABSTRACT

The National Advisory Council for Environmental Policy and Technology (NACEPT) is a public advisory committee originally chartered on July 7, 1988. The Council provides recommendations and advice to the Administrator and other EPA officials on specific topics identified by the Administrator and Deputy Administrator. NACEPT membership includes senior-level representatives of a wide range of EPA's constituents, including: business and industry; academia; Federal, State, and local government agencies; Tribal representatives; environmental groups, and non-profit entities.

In March, 1996, the EPA Administrator requested that a committee of NACEPT be convened to provide advice and develop recommendations on the Agency's current, and proposed, process for managing its information resources. This request resulted in the formation of the Information Impacts Committee (IIC) of NACEPT, which was specifically charged with the following:

Review current information requirements and processes, and provide recommendations on how to effectively position EPA's information resources to support Community-Based Environmental Protection (CBEP), as well as many of its new long-term initiatives, including the Common Sense Initiative (CSI); Performance Partnerships; One-Stop Reporting; and Project XL. The Committee was specifically asked to address the following:

- How should EPA's information resources be focused to effectively address Agency, State, local, and Tribal information requirements as CBEP and the new Initiatives evolve?
- How should current data collections and systems be enhanced to accomplish the goals of CBEP and the new Initiatives?
- How can information resources make stronger environmental protection partnerships?

The committee met several times between April 1996 and September 1997, and the results of their deliberations can be summarized as follows: If EPA is to succeed in going beyond its current pollution control-oriented approach to environmental protection, to place-based, cooperative approaches with its stakeholders, the Agency must:

- ***Formalize the Use of Information as a Strategic Mission Tool***
- ***Establish Information Policy Leadership and Coordination on an Agency-wide Basis***
- ***Integrate Information Across Current Media and Program Divisions***
- ***Provide Broader, More Effective, Public Access to Information***
- ***Assure Ongoing Stakeholder Involvement in Information Policy and Management***

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EXECUTIVE SUMMARY

In March, 1996, the EPA Administrator requested that a committee of the National Advisory Council for Environmental Policy & Technology (NACEPT) be convened to review current information requirements and processes, and provide recommendations on how to effectively position EPA's information resources to support Community-Based Environmental Protection (CBEP), as well as many of its new long-term initiatives, including the Common Sense Initiative (CSI); Performance Partnerships; One-Stop Reporting; and Project XL. The Committee was specifically asked to address the following:

- *How should EPA's information resources be focused to effectively address Agency, State, local, and Tribal information requirements as CBEP and the new Initiatives evolve?*
- *How should current data collections and systems be enhanced to accomplish the goals of CBEP and the new Initiatives?*
- *How can information resources make stronger environmental protection partnerships?*

Between April 1996 and September, 1997, the Information Impacts Committee of NACEPT met to discuss those issues, and to develop a set of recommendations that would best respond to the questions posed. As a result of those deliberations, the Committee offered the following findings:

- The Agency is indeed moving toward defining the information needed to support its new strategic approaches to environmental protection. It can't develop the required information resources, however, unless:
 - ▶ *EPA successfully establishes information as a strategic mission tool,*
 - ▶ *The public has information to monitor performance,*
 - ▶ *Industry has information to develop prevention options, and*
 - ▶ *All stakeholders have the information required for decision-making.*
- Although Current systems have, for the most part, satisfied regulatory requirements for collecting environmental information and managing the single media, statute specific programs of the Agency, they were not designed to support place-based, multi-media, and cross-media approaches to environmental protection or to fully utilize information as a strategic tool. Current information systems do not provide sufficient, appropriate, or accurate information on a multi-media basis to:

- ▶ *Inform decision-making,*
- ▶ *Ensure accountability, or*
- ▶ *Document results and achievements.*

Finally, the committee developed five broad recommendations that they firmly believe need to be implemented if EPA is to succeed in going beyond its current pollution control-oriented approach to environmental protection, to place-based, cooperative approaches with its stakeholders. Those recommendations are:

- *Formalize the Use of Information as a Strategic Mission Tool*
- *Establish Information Policy Leadership and Coordination on an Agency-wide Basis*
- *Integrate Information Across Current Media and Program Divisions*
- *Provide Broader, More Effective, Public Access to Information*
- *Assure Ongoing Stakeholder Involvement in Information Policy and Management*

The Committee firmly believes that by accepting and implementing these five recommendations for establishing IRM as a strategic tool, EPA will succeed in implementing its new mission approaches.

I. INTRODUCTION

The National Advisory Council for Environmental Policy and Technology's (NACEPT's) August 1994 report to the Environmental Protection Agency (EPA) stated that "If EPA does not change its approach to managing information resources, the Agency will fail to implement its new guiding principles."¹ Since then, the Agency has begun to take significant and important steps to strategically manage its information resources, such as creating the position of Chief Information Officer (CIO), initiating the Key Identifiers and One Stop projects, and establishing the Center for Environmental Information. There remains, however, much to be done to realize the full potential of information as a strategic tool in accomplishing the Agency's mission--protecting human health and the environment.

In April of 1996, EPA's Deputy Administrator charged NACEPT's Information Impacts Committee (IIC) with reviewing EPA's strategic information management direction and providing recommendations to ensure that EPA's Information Resources Management (IRM) direction supports the Agency's evolving approaches to environmental protection.

In January of 1997, the IIC presented its Interim Report to EPA. That report provided preliminary findings and recommendations encompassing three broad IRM areas: leadership, organization, and information integration and dissemination. The Deputy Administrator responded in a letter dated April 14, 1997, requesting that the IIC expand on its preliminary findings and recommendations, by further:

- Describing the advantages the Agency will derive by implementing the recommendations,
- Providing a vision of success (i.e., how will the Agency know it has succeeded in implementing the recommendations),
- Suggesting strategies the Agency might adopt, and
- Specifying a timeframe for implementation.

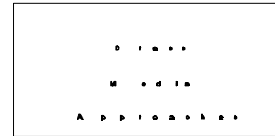
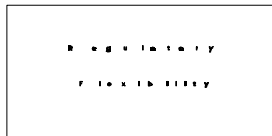
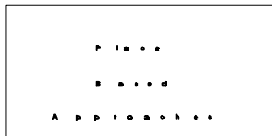
This report provides the Agency with the committee's final recommendations to further the Agency's use of information resources as a strategic tool.

¹National Advisory Council for Environmental Policy and Technology, Recommendations for Comprehensive Information Resources Management, (EPA 270-K-94-002), August 1994

II. APPROACH

The IIC conducted public meetings, received briefings from EPA staff and discussed information needs with a wide variety of individuals representing EPA's stakeholders. Additionally, the Committee conducted several working meetings which resulted in an interim report² and this final report.

The IIC identified three evolving approaches to environmental protection that it would use as a basis for developing its recommendations on EPA's IRM strategic direction:

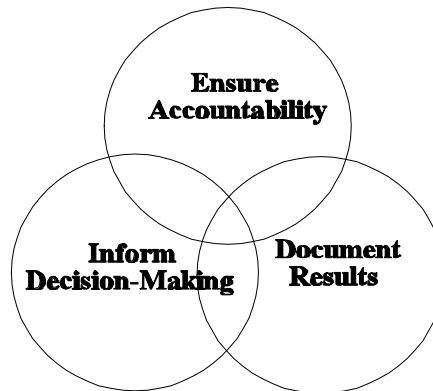


These approaches are intended to go beyond compliance with pollution control regulations and achieve real pollution prevention and source reduction. It is the opinion of the Committee that many of these initiatives *will fail unless* industry, government, and the public have sufficient information to inform decision-making, document results, and ensure accountability.

The Committee focused initially but not exclusively on reviewing the strategic direction of IRM and its ability to support place-based approaches. In preparing its final report, the Committee also considered the ability of EPA's information resources management to support regulatory flexibility and cross-media approaches.

Why Reform EPA's Information?

To fully make use of information as a strategic tool, EPA must ensure that all stakeholders have sufficient information to:



²Information Impacts Committee of NACEPT *Interim Report of Recommendations* dated January 24, 1997

The committee also addressed the questions posed to it by the Deputy Administrator in his memo responding to the Interim Report. These were:

- What advantages will EPA realize by implementing the recommendations?
- How will EPA know it has successfully implemented them (what is the “vision of success”)?
- What kinds of strategies could EPA adopt?
- Are current EPA initiatives on target?
- What timeframe does the committee envision?

Section III, following, discusses the challenges that confront EPA and the Administration as they attempt to supplement efforts to protect the environment that are based on the current system of disjointed single-media statutes, with a more cooperative, community-based, active and forward-looking approach. We also summarize the indicators of success.

The last section of the Committee’s report provides its final recommendations. These are based on the five major recommendations presented in the Interim Report, but they have been developed further as requested by the Assistant Administrator.

III. OVERALL FINDINGS

The Committee finds that the Agency is moving toward defining the information needed to support its new strategic approaches to environmental protection. However, the Agency cannot develop the required information resources unless:

- EPA successfully establishes information as a strategic mission tool,
- The public has information to monitor performance,
- Industry has information to develop prevention options, and
- All stakeholders have the information required for decision-making.

A. THE CHALLENGE

The Committee finds that EPA's major programmatic information systems were designed in an era when EPA was implementing media-specific statutes. They were designed to support pollution control oriented program-specific data collection and reporting requirements. As reporting requirements evolved thru passage of various statutes, EPA developed individual "stovepipe" systems each of which supported specific program objectives. **The current systems have, for the most part, satisfied regulatory requirements for collecting environmental information and managing the single media, statute specific programs of the Agency.**

Using Comprehensive Approach Designations

To ensure a comprehensive and inclusive review of the Agency's evolving approaches to environmental protection, the Information Impacts Committee used the most generic and fundamental designations for the approaches they are reviewing. Listed below are some of the specific EPA projects and initiatives implementing these approaches.

Place-Based Approaches

Community-Based Environmental Protection
Ecosystem Protection

Regulatory Flexibility

Project XL
Performance Partnerships
Common Sense Initiative
Environmental Leadership Program

Cross-Media Approaches

Pollution Prevention
Environmental Justice
Environmental Accountability
One-Stop Reporting
Facility-Identifier

EPA's current systems were not designed, however, to support place-based, multi-media, and cross-media approaches to environmental protection or to fully utilize information as a strategic tool. Current information systems do not provide sufficient, appropriate, or accurate information on a multi-media basis to:

- Inform decision-making,
- Ensure accountability, or
- Document results and achievements.

If EPA is to succeed in going beyond its current pollution control-oriented approach to environmental protection, to place-based, cooperative approaches with its stakeholders, the Agency must:

- *Formalize the Use of Information as a Strategic Mission Tool*
- *Establish Information Policy Leadership and Coordination on an Agency-wide Basis*
- *Integrate Information Across Current Media and Program Divisions*
- *Provide Broader, More Effective, Public Access to Information*
- *Assure Ongoing Stakeholder Involvement in Information Policy and Management*

The Committee firmly believes that by accepting and implementing these five recommendations for establishing IRM as a strategic tool, EPA will succeed in implementing its new mission approaches.

B. INDICATORS OF SUCCESS

The Committee offers the following as indicators/measures of success. EPA will have succeeded in implementing our recommendations in spirit, as well as fact, if the following indicators/measures are substantially achieved.

Information Policy Leadership

- The Agency should appoint a permanent, full-time CIO, separating the current administrative functions, immediately. This position should be comparable to the Agency's other senior decision and policy making positions. This recommendation should be fully implemented in 6 to 12 months.
- The Agency should designate one official to have the authority, responsibility, and mission to use information as a strategic resource. (This includes having sufficient authority to integrate data and information through a centralized structure or process.) This recommendation should be fully implemented in 6 to 12 months.

- The Agency should make permanent selections for all senior IRM positions currently in an acting capacity. Protracted acting positions send a message of indecision and an organization in flux. Permanent selections send the message that the authority for making decisions is there. This recommendation should be fully implemented in 6 to 12 months.
- The Agency should increase the effectiveness of the Executive Steering Committee (ESC) for IRM, by:
 - Clarifying its role and responsibilities, especially to make policy
 - Increasing its authority
 - Ensuring ongoing involvement of its principal members, and
 - Keeping senior executives informed.

The Agency should ensure that the ESC has sufficient time for in-depth, substantial deliberation. This recommendation should be fully implemented in 6 to 12 months.

Data Integration:

- The Agency should develop an implementation plan within 6 months to:
 - Develop an initial basic capability to link its databases, by completing the Key Identifiers initiative (i.e., Facility ID). A goal of this effort should be: One stop access for the user.
 - Integrate all of the Agency's databases. The Agency's ultimate goal should be: One integrated database, reducing duplication of data while maintaining program ownership of data.
 - Resolve Federal-State barriers to integrating information systems.

Data Accuracy:

- The Agency should develop an implementation plan within 12 months:
 - To improve the processes that record data when it is initially submitted by states, industry, the public, and other stakeholders.
 - To ensure corrections to records submitted to the Agency are processed accurately and in a reasonable timeframe (days versus weeks or longer).
 - That has the Agency commit immediately to an ultimate goal of achieving an integrated information system architecture which ensures that data corrected once is propagated to all affected data stores.
 - To establish ways to submit and ensure accountability for data corrections.

Public Access:

- The Agency should commit immediately to the following actions:
 - Reviewing and Selecting Appropriate Public Access Tools
 - Establishing a Public Access Program
 - Improving WWW Home Page
 - Implementing an "800" Number
 - Establishing an Information Ombudsman
 - Providing access to information at alternative locations

Stakeholder Involvement:

- The Agency should commit immediately to the following actions:
 - Establishing an Environmental Information Users Group (EIUG)
 - Developing an Effective Means of EIUG Participation in EPA IRM Planning
 - Developing Approach/Mechanism for Receiving and Responding to Suggestions
 - Developing a Process for Agency Response to All Recommendations of the EIUG

IV. RECOMMENDATIONS

The Committee presents its five major recommendations below, each including an overview of findings and a recommended general course of action that EPA should take. These were initially presented in our Interim Report. In response to the EPA Deputy Administrator's request, we have further expanded on the recommendations. In addition to the findings and recommendations, we discuss:

- Implementation Strategies which EPA may employ to meet the intent as well as the letter of the recommendations,
- Recommended Timeframes for implementation (where short-term means 90 days to 1 year and long-term means up to 3 years),
- Consequences of Failure to Act
- Benefits of Implementing the Recommendations, and
- Indicators of Success, or measures, that will indicate that EPA has implemented the recommendations.

Recommendation 1:
Formalize the Use of Information as a Strategic Mission Tool

Findings

EPA's evolving new approaches to environmental protection will require effective use of information as a strategic resource. This new approach to the Agency's mission requires integrated information from across all of the Agency's programs. EPA's current information holdings must be used effectively, and plans to require additional reporting or share information among government agencies must be carefully planned to inform decision-making, achieve results, and ensure accountability.

Traditionally, information management has been viewed as a "back room" support function, not as an integral, equally important part of an organization's resources, nor as a strategic tool for achieving goals. The Committee finds that this traditional information management model is still in existence at EPA. EPA has designed systems to support media-specific, "stovepipe" regulatory programs (i.e. Air, Water, Pesticides, etc.), each with its own back room IRM support function. While this model may have been sufficient to support a pollution control approach, it does not readily lend itself to properly supporting the Agency's evolving new approaches to environmental protection. Nor is this model sufficient to support the Agency's broader multi-media goals.

EPA has great difficulty in identifying and inventorying its information resources. There is no one inventory of data, nor is there one clear data architecture. EPA does not readily know what data and information it has. Similarly, access to that information is fragmented, without a clear path identified for users to easily achieve access.

EPA does have some clear examples of how information can be used strategically to support its emerging approaches. These examples include the *Toxic Release Inventory (TRI)*, *EnviroFacts*, and *Surf Your Watershed*, where information is being provided to all the Agency's constituents to assist in making informed decisions as they protect their local environment.

Recommendations

EPA must recognize the need to change its current IRM practices if it is to implement the Committee's recommendations and achieve its own stated goals.

The Committee recommends that the Agency move to formally establish IRM as a strategic mission tool. Only then will EPA be able to meet the goals of place-based, cross-media, and regulatory flexibility to inform decision-making, assure accountability, and achieve results. To be a strategic mission tool, information management must be officially recognized as a valued program in the Agency. Further, strategic use of information must become an integral part of the Agency's normal way of doing business, not merely a support function or a series of separate initiatives. The Committee believes that an organization needs to be established for the sole purpose of advancing information as a strategic mission tool. Information is the tool that can help paint a holistic picture of the environmental health of a place, community, or ecosystem; and it can empower all stakeholders to make more informed environmental decisions. A critical element of this effort must include EPA assuring more accurate information, at all levels (including locational information) for use in analytical, access and dissemination tools.

Implementation Strategies

The Committee offers the following strategies for EPA consideration. While there are many potential alternative approaches, the following strategies offer a feasible, straight-forward approach consistent with the intent, as well as the letter, of our recommendations.

Recognize Need To Institutionalize Use of Information as a Strategic Mission Tool

EPA should issue an immediate statement recognizing the need to change its overall approach to managing information resources. This policy-level statement should clearly express the Agency's new vision and direct the efforts of all EPA staff towards achieving it. Information systems should inform decision-making, ensure accountability, and document achievements as well as results.

Reallocate Resources

EPA must commit staff, assign responsibilities, and reallocate resources to this effort. The initial announcement should be immediately followed by revised delegations of authority to organizational components, designation of responsible officials, and the necessary budget documents to reallocate current fiscal year funds, update spending plans, and request funding for future years.

Measures of Success & Implementation Timeframe

Action		Timeframe
1.0	Recognize Need to Institutionalize Use of Information as a Strategic Mission Tool.	Immediate
2.0	Commit Staff, Assign Responsibilities, and Reallocate Resources.	Short-Term
3.0	Commit to Changes	
3.1	Inventory/Architecture for EPA Data	Long Term
3.2	IRM Program with Senior Executives having Responsibility & Authority to Change Practices	Short Term
3.3	Senior Line Managers take Formal Responsibility For Their Portion of IRM Program & Commit to Agency's IRM Program	
3.31	AA's Institutionalize Agency IRM Issues	Short Term
3.32	AA's Accountable for Meeting Agency's IRM Secondary Use Goals	Short Term
3.33	Make Part of AA's Performance Agreements	Short Term
4.0	Communities/Public have Integrated & Useful Access to EPA's information, including: <ul style="list-style-type: none"> o Facility Basics o Compliance/Permit Information o Emissions Data o Decision processes that affect the public (panels, studies, permits, project start dates, etc.) o Sufficient documentation to verify reported information o CBEP Tools and Case Studies o EPA Grantmaking Opportunities o EPA Information Indexes and Directories 	Long Term

Consequences of Failure to Act

Loss of Leadership Role

EPA has traditionally been viewed as a key leader, policy-maker, and innovator in the environmental community. Although that is a role EPA believes should be shared with states, communities and environmental organizations, EPA is in danger of losing the role altogether. EPA still needs to lead at the national level. But it is being perceived as abrogating more and more of that role, especially where information management is concerned. This is especially true at the state level, where states are taking the initiative not because they want to, but because they must fill the vacuum they perceive in information access, dissemination and management. An example is the States of Colorado and Utah, who are bringing geographic information and mapping capabilities to the public over the Internet. They are integrating health, science, media, and exposure data in ways that are more meaningful to local communities. Yet, those tools are not nationally available.

EPA also risks losing credibility with all of its stakeholders. Many of them, already frustrated by what they believe to be redundant, duplicative, and costly reporting requirements, are skeptical of efforts aimed at streamlining reporting requirements, especially since they perceive EPA's IRM processes as fragmented. Industry's belief that no one Agency voice speaks to, and for, IRM issues, makes it much more difficult for them to buy in to streamlining efforts.

Loss of Opportunity to Develop Effective Standards

Another major risk area is in the development of information standards. Although EPA has worked hard to develop information standards, these standards have not been institutionalized. Efforts such as Key Identifiers, Data Registry, and others, have been in the "works" for years, without formal and complete Agency commitment. If EPA does not provide strong leadership, national standards may never become a reality and the end result may be one standard for each state, with the Agency having to grapple with 50 different standards. Stakeholders such as the states do not stand still and wait for long. They fill the void perceived and develop tools internally. The Committee believes that individual, and conflicting, state standards may begin to emerge very soon unless EPA acknowledges its responsibilities and becomes proactive in implementing those standards. Development of the necessary standards should be done on an agency-wide basis and in conjunction with any corresponding Federal Geographic Data Committee (FGDC) activities.

Benefits of Implementing the Recommendations

Formalizing the use of information as a strategic mission tool will go a long way to providing the Agency with the structure needed to support its vision of stakeholder empowerment, burden reduction, streamlining, and “place-based” environmental protection. One IRM voice, speaking for the Agency, will strengthen its credibility with stakeholders, and will better position the Agency to succeed as it continues its efforts to:

- Streamline environmental reporting for facilities,
- Better serve the information needs of secondary users,
- Move beyond remediation to pollution prevention, and
- Engage all stakeholders in more effective environmental decision-making.

Recommendation 2:
Establish Information Policy Leadership and Coordination on an Agency-wide Basis

Findings

The Committee finds that integrated information -- a key tool for the Agency's placed-based, cross-media, and regulatory flexibility approaches -- will not be possible unless one person in the agency is charged with managing information resources as his/her sole responsibility. The Committee commends EPA for establishing a CIO prior to enactment of the requirement in the Information Technology Management Reform Act . The Agency's CIO is charged, however, with overseeing a vast range of other administrative responsibilities in addition to managing information resources.

Insufficient Senior Management Attention to Information

It is the opinion of the Committee that EPA senior management has paid insufficient attention to the development and use of information as a strategic resource. Keeping the CIO in an "Acting" capacity, as well as keeping administrative responsibilities as part of the function of that office, has impeded the institutionalization of the CIO function within EPA. The CIO's duties and responsibilities currently share time, attention, and resources with the Agency's administrative functions. EPA, to this day, lacks a senior manager with the appropriate authority, and sole responsibility for managing an effective agency-wide information resources program. There is still no institutionalized, single point of contact for management of information.

The CIO's policy and authority base has not yet been authoritatively institutionalized in EPA. The Committee believes that by implementing a strong IRM structure and permanent CIO position, the Agency will send a message to its constituents, and the public, that it is truly committed to managing its information and recognizing its importance in promoting effective environmental protection.

Headquarters Senior IRM Officials' (SIRMOS) Responsibilities Should Be More Uniform, Consistent, and Authoritative

The Committee finds that the headquarters SIRMOS lack clear, uniform job descriptions and performance expectations. In too many cases, individuals assigned to that role are, in fact, not senior managers, and are seldom viewed as the key IRM officials by their respective AA's. The roles, responsibilities, and levels of authority vary from AA-ship to AA-ship. Very few SIRMOS can speak, authoritatively, for their AA-ship, where information management is concerned. Each

Program Office needs to have a clear single point of authority and responsibility regarding their IRM policies, plans and technology.

Recommendations

The Committee recommends that a new organization headed by a full-time, permanent CIO be charged solely with ensuring the delivery and management of the information required to accomplish the Agency's mission. This is essential for ensuring that the Agency will be able to move beyond stovepipe systems to provide integrated information for the Agency's new approaches. EPA must commit, organizationally, to establishing the appropriate leadership with the authority and responsibility for positioning IRM to be the strategic mission tool it should be.

If the Agency is going to use information to serve a wider range of stakeholders and better coordinate programmatic and policy direction, it must establish a focus for Agency leadership. EPA must establish an organization lead by someone with the confidence of the Administrator, who would carry out a core, Agency-wide mission.

Implementation Strategies

The Committee offers the following strategies for EPA consideration. While there are alternative approaches, these strategies offer a feasible, straight-forward approach consistent with the intent, as well as the letter, of our recommendations.

Recognize Need to Change IRM Practices

EPA should develop and issue an immediate statement recognizing the need to change the overall approach to managing information resources. This policy-level statement should clearly express the new overall vision, direct the efforts of all EPA staff towards achieving the vision, and reallocate assignments, responsibilities, and resources.

Demonstrate Commitment to Change

The Committee recommends that EPA's Administrator and Senior Leadership:

- **Develop an Inventory of Existing Data Resources** - Prepare a comprehensive directory of operational systems, including basic descriptive information (similar to the Information Systems Inventory), contact person, and description of the data the systems contain. Provide specific information on how the data can be accessed.

- **Develop an Overall Information and Data Architecture** - Develop a high-level information Architecture that would identify the overall types of information which EPA currently has, or should have, to meet its overall responsibilities. The Committee notes that EPA's statutory mandates may not authorize it to collect and maintain all of the information needed to support its evolving approaches to environmental protection. EPA may eventually need to seek Congressional approval. In addition, EPA should develop a Data Architecture in sufficient detail to serve as a guiding resource for systems planners, engineers, and developers.
- **Implement an IRM Program With Senior Executives Having the Responsibility and Authority to Change Practices** - EPA should design and implement an overall IRM Program that includes effective senior executive involvement. In particular, the Executive Steering Committee for IRM charter must be strengthened and expanded. The ESC should expand its oversight beyond its own initiatives and projects to include planning and oversight to all Agency systems development and enhancement efforts. The ESC should be charged with review and approval of plans, oversight of budget, project oversight, and overall coordination.

The membership of the ESC should also reflect its enhanced role. It should be chaired by the CIO, and only Committee Principals should have voting and decision-making authority.

- **Assign the CIO and SIRMOS the Responsibility and Authority to Coordinate IRM and Related Initiatives** - Under the oversight of the ESC, the CIO and SIRMOS must have the responsibility, and authority, to coordinate agencywide IRM and information systems efforts on a daily basis. This authority should include being able to require status, schedule, and cost reporting by project managers. They should exercise oversight of obligations and spending, review and approve requests for transfers of budgetary authority, and regularly inform the ESC of status and progress.
- **Ensure Senior Level Decision Makers Take Formal Responsibility for Their Portion of the IRM Program** - Assistant Administrators must commit to achieving the Agency's IRM goals and objectives. Each AA must implement agency-wide IRM policy within their own program. Each must be held accountable for meeting agency IRM goals. Each AA's Performance Agreement should contain IRM goals and objectives. Finally, each AA should actively participate in Agency IRM planning.

Measures of Success & Implementation Timeframe

Action		Timeframe
1.0	Recognize Need to Change IRM Practices	Immediate
2.0	Demonstrate Commitment to Change	
2.1	Develop an Inventory of Existing Data Resources	Short Term
2.2	Develop an Overall Information and Data Architecture	Long Term
2.3	Implement an IRM Program with Senior Level Decision Makers Having the Responsibility and Authority to Change Practices	Short-Term
2.4	Assign the CIO And SIRMOS the Responsibility and Authority to Coordinate IRM and Related Initiatives	Short-Term
2.5	Senior Line Managers Assigned Formal Responsibility for Their Portion of the IRM Program	Short-Term
2.6	Form the EIUG and Involve at each Stage	Ongoing

Consequences of Failure to Act

The Committee believes that several major consequences will follow a failure to act on the above recommendations. Those consequences include:

Failure to Develop an Effective Infrastructure

The Agency will fail to develop and effective IRM policy, planning, and management infrastructure to support achievement of its goals. While the Agency may be able to pursue a individual initiatives such as CBEP, Project XL, and Reinvention, it will remain unable to effectively coordinate or mandate efforts across media and programs. This will result in a failure to properly coordinate the planning, development, and execution of new systems and databases across those media and programs, and a failure to effectively provide cross-media information to the public.

Poor Communication

EPA has publicly committed to implementing initiatives and efforts that will foster cross-media and streamlining (CBEP, One-Stop Reporting, Reinvention, etc.) Without the proper infrastructure, the Agency may be perceived as unwilling to focus efforts on the real problems of information access, dissemination and management. This may, in turn, lead to loss of credibility with the Agency's constituents. EPA must be perceived as willing to "Walk the Talk" in building a solid foundation for managing information strategically.

IRM Fragmented

Without a solid and empowered management infrastructure, the Agency will continue its fragmented approach to managing its information. Stovepipe systems will continue to be viewed as the Agency's primary information base, and the inefficiencies and duplicative efforts currently plaguing the Agency's IRM process will continue. Reporting and management burdens to the Agency, Industries, and the public, will also continue. And, perhaps most importantly, EPA's culture will not change. Information will continue to be seen as a "back room" operation and process.

Benefits of Implementing the Recommendations

By implementing this recommendation, EPA will be taking a major step toward establishing an effective infrastructure for managing its information resource. It will assist in establishing a solid IRM foundation that can clear the way to:

- Institutionalize current and future initiatives into each of the Agency's Program Offices;
- Delegate Implementation of initiatives effectively;
- Facilitate and increase public confidence in accessing and making use of the Agency's information;
- Reduce reporting and IRM support burdens; and,
- Reduce internal politics/turf protection regarding implementation of IRM efforts.

Recommendation 3:
Integrate Information Across Current Media and Program Divisions

Findings

Throughout the many dialogs between this Committee and EPA representatives, a clear message emerged that EPA does not know the full inventory of data it currently has. Existing systems are not clearly identified, and the Agency's Information Systems Inventory is not very accurate, or complete. Most systems listed are only briefly described, with no detailed description of the types of information they contain. Currently, the Agency does not have one integrated, comprehensive inventory of information that users can go to.

The Committee also found that most data collection efforts in EPA are program and/or media specific, and most of EPA's systems are maintained on a media-by-media or program-by-program basis. Although historically the reasons for these systems' separation by media are rooted in legislation and other legitimate mandates, the current reality is that very few of these systems currently lend themselves to integration. Yet EPA's evolving place-based approaches require integration. EPA has been candid in recognizing that most of its systems cannot easily (if at all) integrate its information across various media, or by facility, locality, or chemical on an ongoing operational basis without considerable expense or questionable quality. EnviroFacts is an example of an initial step to integrate existing information and make it readily accessible to interested parties, yet this example has required the development of a "front-end" system to bring data from various systems together and does not truly integrate the data.

EPA's current information resources are not very well positioned to support the Agency's desire to go beyond media specific efforts to the more holistic cross-media, community-based efforts. The Agency's executives and program leadership have only limited knowledge of the overall data holdings of the Agency. The Agency's stakeholders have even less knowledge or access to that information. The lack of meta data (information about data quality, sources, ownership, etc.) is a pervasive general weakness of the agency's IRM program. This, coupled with the program specific nature of EPA systems, makes it very difficult for any interested party to obtain the information needed from EPA.

In its discussions with both EPA representatives and users at the state, local government, tribal, industry, and community levels, the Committee also found that EPA currently has a very poorly designed data collection process in place. Because the Agency's systems are separated by media and/or program, those charged with the burden of reporting and/or collecting the data are increasingly faced with the following issues:

- *Reporting and Collection Burdens Continue to Increase* - Industries and Delegated States both complain of increased burden in reporting and collection of data as requirements change or increase. This translates to increased costs and hours in fulfilling reporting requirements that could be drastically reduced by one means of reporting without reducing necessary information for environmental protection.
- *Correction of Errors, Across Individual Systems Requiring Like Data, is Virtually Impossible* - As data is reported, and collected, there exist any number of ways for data to be erroneously submitted. Once an error is stored in one or more of the Agency's systems, making corrections to all those systems is an exercise in frustration and futility. There is no simple way to ensure corrections are made to all possible systems.
- *Facility Identification, Across the Agency's Systems, is Extremely Difficult* - Each system has its own way of identifying a facility, with no clear way of cross-referencing, or uniquely identifying it. EPA's efforts at implementing a Facility Id standard have been extremely slow and, to-date, ineffective.
- *Data Duplication* - To the extent there is data duplication, the current fragmented systems make it very difficult to identify duplicative data. It is a problem EPA needs to address quickly.
- *Data Processing Costs Continue to Increase on all Sides* - Duplicative collection, reporting, and processing of data results in increased costs for all parties. Many industries complain of spending increasingly large sums of money and resources to meet all the reporting requirements.
- *A Complete Facility Picture is Difficult or Impossible to Construct* - Because data is maintained by individual programs in the Agency, crossing media to compile information across system lines is a costly, time-consuming, and virtually impossible task. As approaches such as CBEP evolve, and as both the Agency and its constituents continue to develop more holistic needs such as watershed status, trends, etc., information management efforts to support them can be increasingly more costly and ineffective.
- *Industry's Environmental Management and Understanding Can Be Fragmented* - Meeting the Agency's reporting requirements has never been a simple task for industries. Individual reporting requirements force industries to review, separately, what they need to report and to manage their reporting processes separately. The current reporting requirements do not lend themselves to promoting a more holistic management process that would have industries focusing more effort at prevention.

Recommendations

The Committee recommends that EPA develop an Information Architecture that would address information needs across media, and other boundaries, in a comprehensive fashion. The Key Identifiers and One-Stop Reporting Initiatives are a start at making the appropriate connections, but EPA senior management must act forcefully to move them forward. This will require partnership with the states and other stakeholders to establish a national facility registry. EPA's information holdings must be restructured to permit true data integration and to enable the public to gain access to it.

EPA should:

- Link existing databases by location and other key identifiers,
- Implement One-Stop reporting,
- Integrate and reengineer the process of data collection, and
- Develop an integrated facility permitting process.

Implementation Strategies

The Committee offers the following suggestions regarding implementation of this alternative:

Establish a Data Architecture

EPA should establish a data architecture as the first critical step to implement this recommendation. The architecture should focus on integration of data, reduction of duplication and improved data quality. The architecture should also provide a mechanism to bring issues and initiatives together.

Integrating information across media, programs, and organizational components will not be an easy task, but major improvements are possible for relatively modest investments. The analysis that will be required should be undertaken promptly, pursued vigorously, and properly provided with needed resources and management support. EPA IRM staff must assess the current and emerging information needs of the various stakeholders groups. This analysis must have the support of the Agency's highest levels, and must be driven down the Agency's hierarchy as efforts progress. The analysis must not be allowed to become bogged down in excessive detail, or delayed by assertions of excessive "uniqueness" by programs or interest groups.

The architecture should be both a "logical" (depicting relationships within the model) and "physical" (depicting database structure). The logical data model should identify the major

entities (persons, places, or things about which information is being gathered), such as facilities, measures of environmental quality, or local jurisdiction, and how those entities relate to each other. The physical model will address the location, structure, access methods and other characteristics of the database(s). It should be noted that a logically integrated database, if properly thought out, does not need to be physically resident on a single computer, be part of the same system, or be managed by the same people.

The architecture should include a logical and physical data model in which the programs use data stored in a core database, not their own isolated databases. For example, the IDEA and EnviroFacts databases would be merged. The systems would not change ownership, nor would the responsibility for basic data accuracy and integrity. What would change is that the data would be standardized, catalogued, reconciled, cleaned up, collected more efficiently and have a more standard, less onerous reporting cycle.

The Administrator should commit the Agency to this effort immediately and the CIO should take an active, personal role in directing and managing this effort.

As a first step, the Agency must develop a comprehensive and realistic Transition Plan. The CIO should personally manage the development of the plan, as well as its implementation. EPA should also establish a permanent funding base controlled by the ESC, not the IRM staff. The Working Capital Fund may provide a ready mechanism for doing this.

Establish Key Identifier Standards and Definitions

An essential first step is to come to closure on, and issue, the major Key ID standards: facilities, organizations, chemicals, and location. The latter two (CAS Number and Latitude/Longitude) have been determined, but effort and decision making is needed on the first two. EPA has been developing a system that relates facilities to their various identifiers in current systems (the Facilities Index System (FINDS)). Full implementation of the facility key identifier initiative would result in a major reduction of duplicate facility information at EPA. More importantly, users will be able to find out all that EPA knows about a particular facility.

Promulgate Data Standards

Once the key ID standards have been established, EPA should promptly disseminate the standards to state environmental protection and health agencies, local government agencies, industry groups, environmental activist groups, and other interested parties. The standards should be published in the Federal Register, posted on EPA's Worldwide Web site, and publicized in newsletters, journals, and the press.

Transition to New Architecture

The Agency must transition quickly to the newly defined target architecture. Immediate actions should include:

- Development of accurate meta-data for existing stovepipe systems.
- Initiation of projects to develop the target databases,
- Development of interim capabilities to cross-reference or merge data from legacy systems, pending completion of the development projects, and
- Data purification efforts, to ensure that the new systems do not inherit errors.

Measures of Success & Implementation Timeframe

Action		Timeframe
1.0	Establish Data Architecture	Long-Term
2.0	Establish Key Identifier Standards and Definitions	Short-Term
3.0	Promulgate Data Standards	Short-Term
4.0	Transition to New Architecture	Long-Term

Consequences of Failure to Act

Failure to implement the recommendations will result in increasing difficulty in EPA achieving its stated Agency goals and objectives, as well as its IRM vision.

Benefits of Implementing the Recommendations

By implementing the recommendations, EPA will position itself and its stakeholder community to make major progress towards the new environmental management paradigm.

Recommendation 4:
Provide Broader, More Flexible, Public Access to Information

Findings

The Committee consistently received one message from EPA constituencies: They all need ready access to information

They all need ready access to information despite their varying degrees of technological sophistication, abilities, and capabilities. With some citizens and concerned groups lacking sophisticated computer skills, up-to-date equipment, and, in some cases, even reliable telephone services, the Committee finds that there are serious access and equity issues inherent in the use of today's technology and that a range of information access options are needed.

By providing spatial data and analytical tools the Agency is strategically sharing information and providing a much needed framework for users to analyze the complex relationships within their communities. Information such as demographics, land use, wetlands, and watershed data support assessment of a variety of environmental issues including water quality, pollutant loadings and emergency planning. Despite its initial efforts, the Agency does not yet have sufficiently accurate information to support spatial analysis on a national basis, without extensive quality assurance and quality control.

The Committee notes that EPA efforts to improve access to data, while plentiful, have often been sporadic and incomplete. Initiatives vie with each other for attention and resources. Many of EPA's constituents believe EPA has a tendency to pursue the "initiative du jour" approach.

Access to data is often fragmented, convoluted, or both. Those seeking information must first identify the program office which might be responsible for the data sought. Even then, once the appropriate office has been identified, the user must track down whoever on the staff knows, in detail, the system and how the data can be obtained. The Committee does recognize that EPA has made major strides in improving access through systems like EnviroFacts and Surf Your Watershed. But these examples also support our basic finding: the data made available is collected and made available by individual Agency programs, and is piecemeal. Although efforts such as these have been positive and useful, an EPA-wide assessment, plan, and action is needed more. No single, one point of contact currently exists in the Agency to assist users as they try to identify, and access data and information.

Vigorous and thorough implementation of the Government Information Locator System (GILS)

process is important. Users seeking access to EPA information should, in principle, have equal access no matter how they choose, or are able, to communicate with the Agency. Individuals/Organizations should have the option of receiving data electronically, via telephone, paper, by mail, or over the counter. Just as EPA's data is fragmented, so also is public access. There is no single point of contact regarding public access issues, needs, or initiatives.

No one, single manager is in charge of public access processes or assistance. While the CIO may have an important role, the systems and initiatives supporting access are often not under the CIO's control; rather, many are program specific initiatives. For example, the data provided via EnviroFacts is often limited to what programs offer.

Additionally, a structured data quality process does not exist, nor does it provide a suitable means for correcting inaccurate/incorrect data. Therefore, EPA risks providing incorrect or outdated information to its stakeholders.

Public access to information means more than just providing raw data. Recipients of the information need to know the context of the data and may need assistance in its interpretation. EPA should provide the information in ways that anticipate, to a degree, the questions which users are asking.

EPA does not provide adequate meta-data for available data, to users. Meta-data (data about the data) is needed so that interested parties can assess the usefulness, likely accuracy, time period, source, and format of the data.

The Committee acknowledges that EPA 's recent establishment of a Center for Environmental Information and Statistics (CEIS) could be a major step in the right direction. If properly implemented, it could provide a needed focal point and could be used to support the development of the necessary processes we have identified. The Committee cautions EPA, however, that it must develop the needed support processes and infrastructure as soon as possible, preferably before the CEIS opens its doors, if this Center is to be effective.

Recommendations

The Committee recommends that EPA explore all of the various ways in which information products can be distributed, including the Worldwide Web, an '800 number' system, libraries and information centers, and partnerships with state and local government, interest groups, and others. EPA must recognize the access and equity issues inherent in the use of today's technology and provide a range of information access options. When providing information, EPA must be able to cross media boundaries, link data using key identifiers, clearly define and characterize the information, and appropriately safeguard Privacy Act and proprietary information.

Because the Freedom Of Information Act (FOIA) process is cumbersome and expensive, and because there are more effective alternatives available and emerging, it should be considered a last resort for providing information.

Implementation Strategies

The committee provides the following recommendations for improving access to information:

- **Review best available tools** -- for searching or requesting information. EPA should select and provide those that are simple, easy to use, and effective.
- **Provide an electronic link** — a link to key information resources can be incorporated in EPA's home page. That link should be visible and understandable, and it should be on EPA's home page, and placed such that it shows on the computer screen without having to page or scroll down or to the right.
- **Provide an '800 number'** — so that those seeking information have a highly visible, publicized first stop. This link should also follow through with requests, and be considered the primary, single point of contact for initial inquiries.
- **Provide access to information at alternative locations** — such as state offices, other federal offices with environmental responsibilities, libraries, schools, community groups, or churches, for communities which may lack access to automation.
 - **Provide consistent access** -- to information regardless of how the information is requested (Internet, "800" number, library, community outreach, etc.)
 - **Integrate effective mapping and other visualization tools** — including software tools, library functions, and user training.
 - **Publish data in the form of maps** — by making use of emerging Internet capabilities.
- **Provide multi-lingual support** — for Citizen Outreach and Environmental Equity efforts.
- **Improve data quality** — by providing users with the opportunity to offer corrections to data.

The committee also recommends the following strategies for making information more available to the public:

- **Provide information on Pollution Prevention alternative technologies** -- including zero-discharge options and clean-up technologies, organized by industry, chemical, type of process, and other relevant categories.
- **Provide saturation data** -- the whole human and ecological framework -- from the currently diverse data sources, for communities (including states and other agencies.)
- **Provide grants information** -- in a much more timely and flexible manner. Applicants for grants should be allowed sufficient time to prepare careful and thoughtful responses.

Measures of Success & Implementation Timeframe

Action		Timeframe
1.0	Review and Select Tools	Short-Term
2.0	Establish Public Access Program	
2.1	Improve WWW Home Page	Short-Term
2.2	Implement "800" Number	Short-Term
2.3	Provide access to information at alternative locations	Long-Term
3.0	Quality Assurance/Quality Control Program and Standards established with a feedback loop that works.	Long-Term
4.0	Manager of Public Access Established	Long-Term
5.0	Get Feedback From Data Users	Ongoing

Consequences of Failure to Act

If EPA does not implement this recommendation, it will fail to follow through on the Vision that has been publicized in its IRM plan. As a second, but still highly important impact will be that EPA will lose credibility...the public may ultimately perceive EPA as "Talking the Talk" but not "Walking the Talk".

Benefits of Implementing the Recommendations

Public access to environmental and health information is needed as a major way to achieve the Administration's goals of reducing reliance on coercive, regulatory, and punitive approaches to environmental protection, while expanding the role and capabilities of local communities to assess

and protect their “places”. Those who live and work in a local community, including business owners, can not be expected to become effective participants in preventing environmental problems if, in order to do that, they must become experts in EPA’s systems, invest huge amounts of time and resources searching for information, or can not readily understand the data accessible to them.

Similarly, the Agency needs to encourage the move towards prevention rather than remediation by better informing decision-making. All stakeholders need information on the ecological, economic, and health consequences of their own, and social, decisions. EPA and its partners must work together to pool the information each has and make it available to all stakeholders to promote a common understanding of the facts, support a democratic debate on the issues, and influence environmental decision-making.

Recommendation 5:
Assure Ongoing Stakeholder Involvement in Information Policy and Management

Findings

The Committee finds that there are new and challenging information issues facing EPA, and the Agency needs the help of its stakeholders in addressing them. EPA has a broad range of users of its information tools, and it clearly impacts many stakeholders through its policies and implementation. Involvement of stakeholders through NACEPT and other advisory vehicles, as well as State representation on the Agency's Executive Steering Committee, have proven useful. However, there is no formal, established, and recognized method for ongoing stakeholder involvement, beyond the States.

The Committee points out that there is no formal forum for stakeholder involvement in EPA information management despite new mandates from the Government Performance & Results Act (GPRA) to involve interested stakeholders. The Agency should develop such a forum, so that all types of users are offered the opportunity to participate. This should be an ongoing body and process. Such a body would encourage users to be frank, identify needed actions and improvements, and candidly express their views.

EPA also does not have a feedback loop for public access. Those wishing to comment on how data is provided, submit requests, or report problems have no way to provide that information to the originators of the data.

Recommendations

The Committee recommends that EPA assure ongoing constructive engagement of all stakeholders in the development, implementation, and evaluation of new information policies and mechanisms.

EPA should establish an on-going information user group, to include representation of major stakeholders. This should be open to all current and potential users of EPA information (the public, regulated industry, state and local governments, public health agencies, etc.) These constituents must be involved on an ongoing basis. EPA should establish a broad-based information "Users' Group" to provide regular constructive advice, feedback from stakeholder constituencies, and reactions to proposed actions and initiatives.

Implementation Strategies

The committee offers the following suggestions regarding the implementation of this recommendation:

Establish a standing working group to form the initial core of the stakeholder Users Group. This working group can be recruited from current active participants in programmatic systems user or advisory groups, other advisory groups, and members of advisory bodies such as this Committee. Eventually, EPA can recruit from the stakeholder community, being careful to insure that this Users Group includes representatives of all types of stakeholders.

The Users Group should be made an effective forum for participation and advice to EPA. The Agency should consider various means of supporting them, including:

- Worldwide Web home page linked to EPA's, states', industry and other pages.
- Lotus Notes discussion database
- Supporting a Worldwide Web list server
- Publishing a periodic newsletter.

As previously stated, EPA should bear in mind that stakeholders may lack sophisticated automation and even, at times, basic telephone service.

Finally, if this Users Group is to be helpful to EPA, the Agency must respond promptly to its recommendations, suggestions, issues, or advice on systems modifications or new development.

As a supplementary recommendation, we observe that EPA should consider investing in, and supporting, existing information dissemination efforts of other stakeholder groups. Taking advantage of what already exists is a means of reducing duplication, ensuring inclusion of a broader range of stakeholders, and becoming an equal partner rather than always being the leader.

Measures of Success & Implementation Timeframe

Action		Timeframe
1.0	Establish Stakeholder Environmental Information Users Group (EIUG)	Immediate
2.0	Involve EIUG in IRM Policy and Planning	Long Term
3.0	Respond to all EIUG Suggestions	
3.1	Develop Approach/Mechanism for Receiving and Responding to Suggestions	Immediate
3.2	Respond to all EIUG Suggestions	Ongoing

Consequences of Failure to Act

If EPA does not implement this recommendation, its credibility with its stakeholders will continue to suffer, and it will be losing the opportunity to improve efficiency, lower costs, and expand input from them.

Furthermore, failure to act on this recommendation will deprive EPA, and its stakeholders, the benefits that would have accrued from an effective advisory body, including:

- Improved ability to meet stakeholder information needs,
- Improved stakeholder understanding of policies and decisions,
- Improved management of information as a resource, and
- More accurate data.

Benefits of Implementing the Recommendations

By implementing this recommendation, EPA can expect to benefit from the input stakeholders can provide. Each perspective is unique. National concerns and perspectives vary from Local concerns and perspectives, and from International concerns and perspectives. Each can provide EPA with insight not readily available within the Agency.

ATTACHMENT A
LIST OF COMMITTEE MEMBERS

Chair: Thomas S. Davis
President & CEO
Thomas Davis & Associates
Murray Hill, New Jersey

Co-Chair: Julie K. Norman
President
Headwaters Inc.
Ashland, Oregon

Designated Federal Official:
Joseph A. Sierra
Office of Cooperative
Environmental Management
U. S. Environmental
Protection Agency
Washington, DC

Patricia Bauman
President & Co-Director
The Bauman Foundation
Washington, DC

Suzanne M. Hess, AICP/PP
Supervising Planner
Hunterdon County Planning
Board
Flemington, New Jersey

Cheryl Morton
Senior Manager, Government
Relations
Synthetic Organic Chemical
Manufacturers Association
Washington, DC

Gerard Bulanowski
Director
Environmental Assessment
Unit
Colorado Dept. Of Public
Health & Env't
Denver, Colorado

Patricia K. Hill
Manager
Federal Regulatory Affairs
Georgia-Pacific Corp.
Washington, DC

Paul Orum
Working Group on
Community Right-to-Know
Washington, DC

Patricia Cummins
GIS Manager
New Jersey DEP&E
Trenton, New Jersey

David Hulse
Associate Professor of
Landscape Architecture
University of Oregon
Eugene, Oregon

Jack Dangermond
President
Environmental Systems
Research Institute
Redlands, California

Michael Moilanen
Multi-Media Environmental
Specialist
Mille Lacs Band of Chippewa
Onamia, Minnesota

ATTACHMENT B
SCHEDULE OF COMMITTEE MEETINGS

DATES & LOCATION

April 17-18, 1996 - Arlington, Virginia

July 11-12, 1996 - Denver, Colorado

September 10-11, 1996 - Washington, DC

January 21-22, 1997 - Washington, DC

April 15-16, 1997 - Washington, DC

ATTACHMENT C
SPEAKERS, PRESENTERS & PANELISTS

COMMUNITY:

Beth Gallegos Chairperson, Citizens Against Contamination, Denver, CO
Lorraine Granado Director, Cross Community Coalition, Denver, CO
Mary Miera New West Side Economic Dev. Corp., Lincoln Park/La Alma, Denver, CO

LOCAL GOVERNMENT:

Dr. Ed Demos Denver Environmental Services, Denver, CO
Guillermo DeHerrera Commissioner, Adams County, Colorado
R. L. Jones Clear Creek Superfund Site TAG, CO
Dave Swanson Pollution Prevention Program Manager, Boulder County Health Department,
Boulder, CO

STATE:

Jim Christensen Environmental Scientist, Utah Division of Water Quality
Deborah Myers Senior Environmental Analyst for Inspection and Compliance
Wyoming Department of Environmental Quality
Dr. Florine Raitano Executive Director, Colorado Rural Development Council

TRIBAL:

Kim Clausen Environmental Specialist for Oglala Souix Tribe
Debbie Madison Environmental Manager, Fort Peck Tribe, Montana
Wes Martel Wind River Associates, Wyoming

INDUSTRY:

Frank Gorski Huntsman Polypropylene, Woodbury, NJ
Mark Greenwood Coalition for Effective Environmental Information (CEEI)
Rex Tingle Industrial Hygienist/Labor Representative, AFL-CIO
Bilinda Townsend Federal Environmental & Health Affairs, Boeing
Allen White The Tellus Institute

ATTACHMENT C
SPEAKERS, PRESENTERS & PANELISTS
(continued)

EPA - REGIONAL:

Josie Hernandez Data Systems Leader, Pollution Prevention Office, Region VIII
Robert Laidlaw Director, Region VIII Environmental Service Center & Technical Library
Nathaniel "Nat" Miullo Community Environmental Protection Coordinator, Region VIII
Paul Reiderer Director, Data Systems Management, Region VIII
Lee Roberts Tribal Program Manager, Tribal Assistance Program, Region VIII

EPA - HEADQUARTERS:

Dr. Allan Abramson Director, Information Management Division, OPPT
Marian Cody Special Assistant to the Deputy Administrator, EPA
Dave Davis Deputy Director, Office of Wetlands, Oceans & Watersheds, OW
Mark A. Day Director, Information Resources Management Planning Division, OIRM
Elizabeth Fellows Chief, Monitoring Branch, AWP, OWOW, OW
Patrick J. Garvey Team Leader, Information Warehouse, OIRM
Edward J. Hanley Director, One Stop Reporting
Clarence Hardy Director, Office of Cooperative Environmental Management, OA
Jim Horne Office of Wastewater Management, OW
Antonio Jover Senior Information Resource Management Official, OSWER
Jacques Kapuscinski Project Leader, CBEP Page & Tool Kit
Jon Kessler Director, Emerging Sectors & Strategies Division, OPPE
Arthur Koines Deputy Director, Office of Strategic Planning & Environmental Data, OPPE
David Lyons Chief, Energy & Transportation Branch, OECA
Emma McNamara Team Leader, Information Access Team, OIRM
Mike Mundell System Manager, Permit Compliance System
Alvin M. Pesachowitz Acting Assistant Administrator, OARM
Kathy A. Petruccelli Acting Deputy Director, OIRM
Michael Stahl Deputy Assistant Administrator, OECA
Tom Tillman Chief, Communications & Outreach Branch, OPPTS
Paul A. Wohlleben Acting Director, OIRM