Information Access Strategy

January 2009

Table of Contents

1. EPA's Information Access Strategy

Environmental Information Access

Protecting the environment is everyone's business. Our nation's environmental success over the past 40 years has been the sum of achievements by many—EPA and other Federal agencies; tribal, state, and local government partners; environmental groups; communities and concerned citizens; and responsible industry.

Environmental regulation reined in the glaring problems that served as our call to action on Earth Day, 1970. Today's environmental problems are more complex, often involving diffuse pollutant sources. More than ever before, environmental solutions depend on effective action by countless individuals working voluntarily to address problems that are beyond the practical reach of command and control regulation.

To help protect our environment, everyone—from the Internet-savvy environmental professional to the concerned citizen reliant on printed materials—needs ready access to high quality information to provide the foundation for sound decisions. Through this Information Access Strategy, EPA hopes to enhance access to environmental information so that we may all be better equipped to help address our nation's environmental challenges.

National Dialogue on Access to Environmental Information

In recent years, EPA has witnessed sweeping changes in the growth and use of environmental information. The thirst for environmental information among environmental professionals and the concerned public is stronger than ever

before. EPA and other information providers are producing more environmental information today than at any time in the past. EPA—working with these other providers and using newly available technology—has an unprecedented ability to make information available to people who need it.

In December of 2007, EPA's Assistant Administrator for Environmental Information and Chief Information Officer (CIO), Molly A. O' Neill, launched a National Dialogue on Access to Environmental Information. Between January and mid-June of this year, EPA's Office of Environmental Information (OEI) met with people throughout the country who use environmental information to learn about their information needs and access preferences. EPA assembled the thousands of comments received into this Information Access Strategy, offering direction for future efforts to enhance access to EPA's environmental information.

As the National Dialogue took the public stage last winter, EPA heard many comments about the strategic importance of sound information; the tremendous opportunities offered by new, Internet based information sharing technologies; and the growing field of information providers. These issues raise three broad questions for this Strategy:

First, stepping above specific issues of technology, data and information, how should EPA frame its overall goal for managing Agency information resources?

Second, looking back on the progress EPA has made over the past decade, how can the Agency build most effectively on past accomplishments?
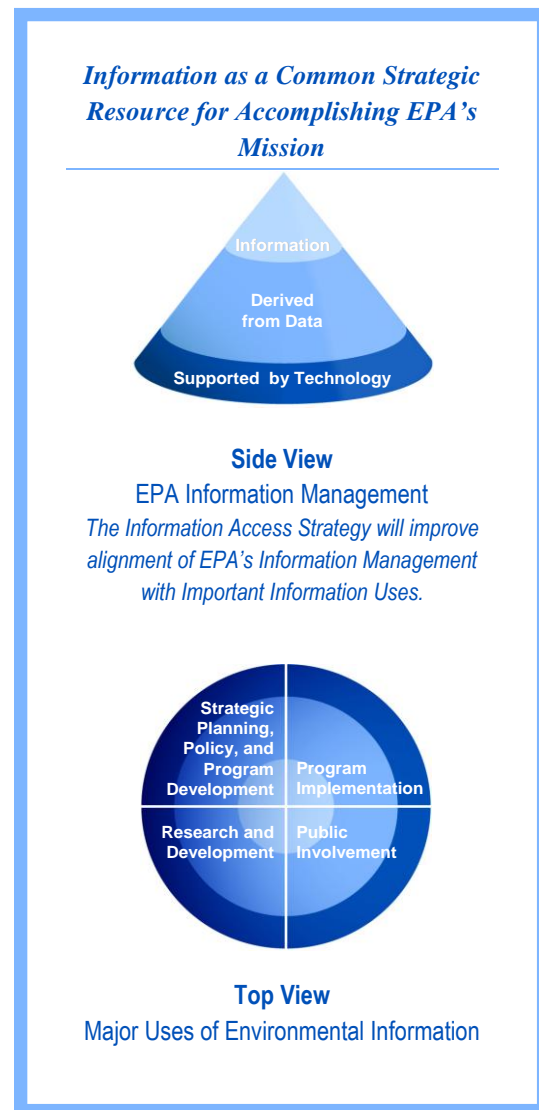
Third, looking beyond EPA information resources, what role should the Agency play within the larger community of external providers of environmental information? The following discussions of these three questions offer general context for the National Dialogue findings about audience information access needs and recommendations in this Information Access Strategy for addressing them.

Managing Information as a Common, Strategic Resource

EPA's path through the thicket of technology, data and information management issues begins with a simple, transcendent goal: To manage environmental information as a common, strategic resource for accomplishing the Agency's environmental mission. As the graphic on this page shows, the strategic management of information technology, environmental data and information resources implies a direct management alignment with the Agency's mission to protect human health and the environment. The graphic also presents an example profile of major mission-critical information uses. These information uses—for program research, planning, implementation, and public participation—already receive the attention of information resource managers for their individual areas of program responsibility.

Information resources at EPA are usually developed under one of EPA's many specific environmental laws. Agency information owners invest in their information resources as necessary to meet the requirements for programs implemented under individual laws. A new, Agency-level goal for information resource management draws the attention of information resource managers to mission-critical uses of environmental information outside their

individual program offices and circles of primary information users.

Information as a Common Strategic Resource for Accomplishing EPA's Mission

Information

Derived from Data

Supported by Technology

Side View
EPA Information Management
The Information Access Strategy will improve alignment of EPA's Information Management with Important Information Uses.

Strategic Planning, Policy, and Program Development

Program Implementation

Research and Development

Public Involvement

Top View
Major Uses of Environmental Information

Improved access—leading to wider, more diverse secondary uses of EPA data flows, data systems and information products—will present new challenges for Agency information resource managers. In the near term, secondary users must be adequately informed of the quality and suitability of today's resources for uses other than the primary ones for which they were originally designed. Ultimately, however, the designs of EPA data and information resources must evolve to accommodate the requirements

of mission-critical secondary uses. EPA's new Quality Policy (www.epa.gov/oei/quality.htm), embodies the key principles of data and information management needed to guide EPA toward issuance of appropriate documentation supporting secondary uses.

Building on EPA's Past Success

Over the past decade, EPA has used advances in communications technology to build toward a single, virtual work place, connecting Agency's headquarters staff in Washington D.C. with staff located in Regional Offices and research laboratories throughout the country. Local area networks have been consolidated into a centrally governed intranet. EPA's telecommunications services make teleconferencing easy for every EPA employee. Video conference equipment is commonplace throughout the Agency. Portable e-mail devices allow managers and staff alike to monitor work flow in real-time from anywhere. Today, EPA's people are digitally connected to a degree scarcely imagined a decade ago.

EPA has also used advances in information technology to make headway connecting staff with the Agency's vast information resources. EPA's information systems—originally designed to serve individual program needs for twelve major environmental statutes administered by EPA—are gradually becoming interoperable. Each year, more EPA information resources are digitized by the Agency's library network for easy, electronic access by staff across the country. An expanding extranet, known as the National Environmental Information Exchange Network, is starting to deliver seamless data reporting and provide a single, convenient point of data access services between EPA and its tribal and state environmental program partners.

To complete the virtual work place, EPA recognizes the importance of providing its staff everywhere with fuller, digital access to the Agency's information resources. Thanks to technological advances of the past decade, the success of EPA's work processes no longer depends on the co-location of people. Likewise, EPA's people should be freed from concern about the accessibility of Agency information resources they need to do their work.

EPA's Information Roles
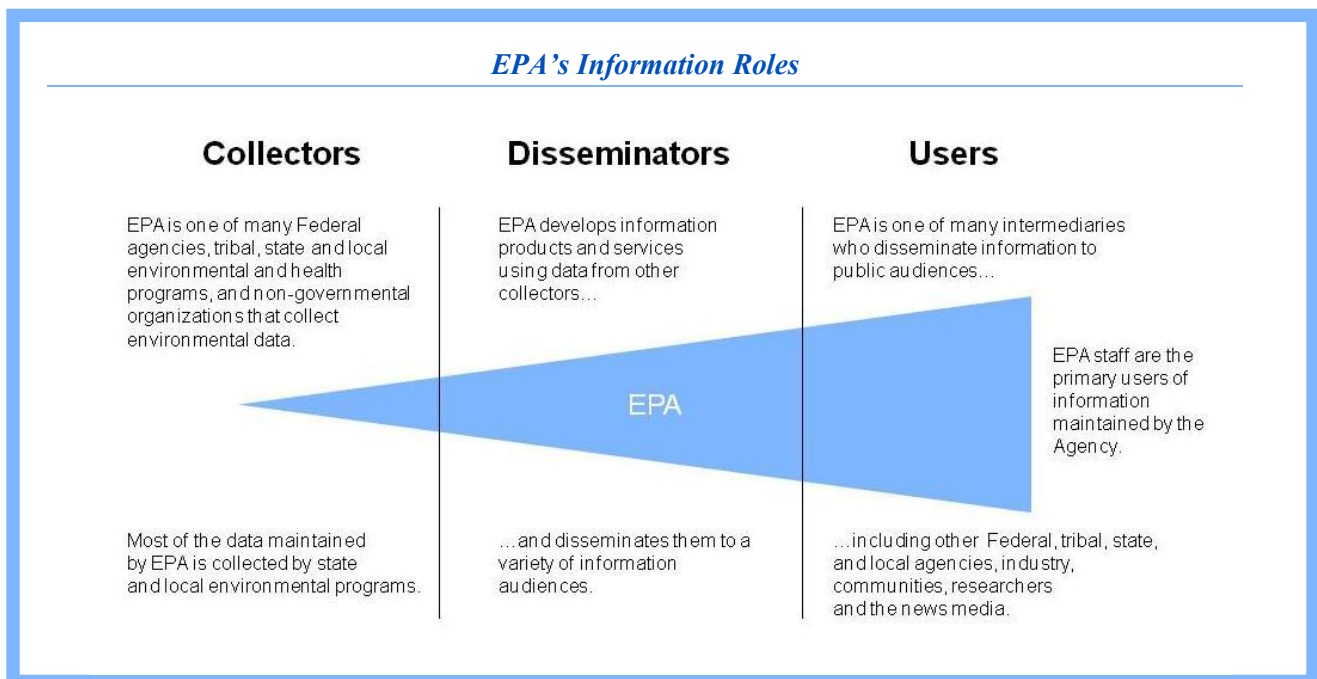
EPA's Role among Environmental Information Providers and Users

EPA belongs to a large, growing field of collectors, disseminators, and users of environmental information. Like many of these organizations, EPA has an established niche consisting of multiple roles and dependencies on other information providers. The Agency collects some data, such as the Toxics Release Inventory, under Federal environmental laws, and relies on other tribal, state, and local collectors for much of its basic regulatory compliance monitoring information. EPA disseminates information to a wide variety of user audiences, who are often also looking for complementary information collected or disseminated by other Federal agencies, such as the Fish and Wildlife Service, and private organizations, such as the Nature Conservancy. Other information disseminators, such as some environmental groups, serve audiences using information maintained by EPA.

A new information landscape composed of interdependent collectors, disseminators, and users is now forming in response to the rapid, enabling changes in information technology. Through timely engagement, the Agency has the opportunity to strengthen key relationships necessary to promote a landscape more responsive to EPA's own information needs and to those of its information audiences. EPA's audiences include not only people who access information digitally via the Internet but also others, like members of low-income communities, who rely on face-to-face meetings and access to printed materials.

EPA must seek the advice of key players in the field of environmental information collection and dissemination on how to help shape the new information landscape for the common good. . Only by using such a broadly collaborative approach involving other government and private providers can EPA expect to address the growing needs of its information audiences.

Limited discussions on these three questions—concerning strategic approach, completing the virtual work place, and external Agency roles—have already stimulated valuable ideas about the future of information resources management. EPA discussions should intensify in the coming months, drawing energy from findings from the National Dialogue and direction from the recommendations in this Information Access Strategy.

2. Information Access Needs of EPA Audiences

Approach for Public Outreach

During the course of the National Dialogue, EPA studied audience information needs and preferences through research, dialogue, and observation (see text box to the right). Various groups participated in the process, both internal and external to the community of EPA, Federal, tribal, state, and local agency employees that are engaged in environmental information collection, management, and dissemination.

Participants were provided with opportunities to comment on the findings from the National Dialogue, which were updated regularly on EPA's Web site.

Among the many comments received from National Dialogue participants were a wide variety of specific information needs. For a more in-depth look at individual comments and summaries developed by EPA for major audience groups the reader is encouraged to visit EPA's National Dialogue Web site at www.epa.gov/nationaldialogue.

Information Access Needs

During the National Dialogue, EPA collected information from hundreds of people regarding their environmental information access needs. EPA heard from a wide variety of individuals who were eager to share the challenges they have faced when accessing environmental information. Many participants expressed why they were interested in finding environmental information and shared their ideas for improving access to environmental information.

Based on the information collected from the various National Dialogue activities, four broad

---

National Dialogue Activities At a Glance

Background Research

- The National Dialogue began with a review of more than 100 existing resources on information audience needs.
- Research included the examination of reports and activities conducted by EPA and others concerning needs and preferences for access to environmental information

Outreach Activities

- Small, 2-hour information gathering sessions were held with each of five targeted audience groups including industry representatives; education professionals; Federal, tribal, state, and local environmental and public health professionals; news media representatives; and environmental and community groups.
- Ten listening sessions were held at various conferences with current and potential EPA audiences.
- A publicly available Internet Comment Board was created where participants were directed to provide feedback on their information needs and preferences.
- Three internal EPA Web-based comment sessions were hosted by EPA for EPA staff to communicate important access needs and issues.
- A Web-based external EPA Partner comment session was hosted for EPA's information partners to comment on access needs.

Observations on Search and Web Use

Two investigations studied use of the EPA Web site:
- An analysis of the top search terms and topics entered into EPA's search engine
- An analysis of which pages were visited most frequently and how visitors navigate to and around the EPA Web site.

---

themes relating to EPA audiences' environmental information needs emerged:

- Finding environmental information from EPA is difficult.

- Understanding EPA's information is sometimes challenging.
- Using and analyzing EPA's information often requires assistance.
- Obtaining environmental information using Web-based technologies is a growing trend but can often be enhanced with access to expert people.

Finding Information

One of the most prominent themes heard throughout the National Dialogue is that people cannot find the environmental information they need. People expressed this as one of their primary challenges at nearly every information gathering session. The problem of finding relevant environmental information involves several aspects, which are summarized below.
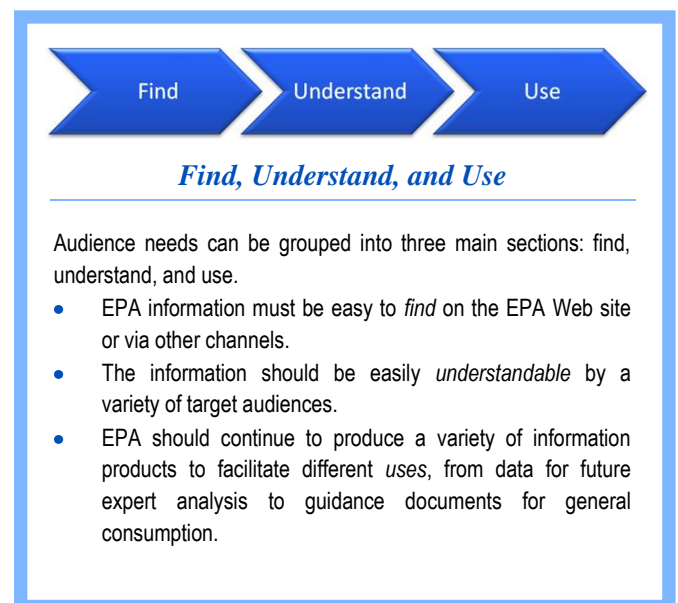
Some people are not aware of many of EPA's vast information resources

Even when environmental information audiences are aware that they need environmental information, they often do not know where to go for it. In some cases, people are not aware that many EPA information resources are already available on the EPA Web site.

People cannot easily search or navigate through EPA's Web site

EPA's primary method for providing information to its external audiences is through the EPA Web site. People expressed frustration with their experience in using EPA's Web site search function. Specifically, participants stated that search terms often do not provide valuable results, the organization of the search results is difficult to navigate, and they cannot sort their search results to find what they need. Other people expressed the need for EPA's Web site

information to be better organized and easier to navigate. People of all technical backgrounds complained that navigational links are not obvious, information is not categorized in ways that are logical to them, layouts are inconsistent, and good information is obscured by old content and broken links. EPA was also informed that some visitors would benefit from additional help (on-line or through personal contact) in finding information due to differences in technical capabilities or language abilities.

Find, Understand, and Use

Audience needs can be grouped into three main sections: find, understand, and use.

- EPA information must be easy to *find* on the EPA Web site or via other channels.
- The information should be easily *understandable* by a variety of target audiences.
- EPA should continue to produce a variety of information products to facilitate different *uses*, from data for future expert analysis to guidance documents for general consumption.

Some people are not fully aware of environmental problems that affect them

Some people rely on help from information intermediaries—e.g., teachers, librarians and the news media—to find information about an environmental concern. Environmental information intermediaries informed EPA that their constituents are often not aware of environmental problems that may affect them. For example, parents and teachers are frequently unaware of indoor air quality problems in their schools. This lack of awareness can make it difficult for people to conduct an informed search of environmental information of interest to them.

Some people need information alerts on *hot* environmental issues and the newest EPA actions

Some of EPA's audiences do not have the time or ability to continuously visit the EPA Web site to find new or updated environmental information. This may occur because they need the information immediately (e.g., to respond to constituent questions or regulatory obligations) and do not have time to look for it, or because they are unaware that new or updated information exists. Based on findings from both the National Dialogue Comment Sessions and the Web Use and Search Term Analyses described in the last section, EPA's audiences expressed interest in being alerted to information about *hot* topics, the latest EPA actions, or current environmental events. They suggested mechanisms such as a *What's New* button on the EPA home page, email alerts, and Internet subscription services.

Some people experience confusion regarding the type of environmental information provided by EPA versus information developed by other Federal, tribal, state, and local sources

Many environmental information seekers believe that EPA is the source of most, if not all, of the environmental information held by the Federal government. As one respondent said, "the 'E' in EPA is for environment," and so EPA is where people look for all things environmental. Many respondents are confused when an environmental topic is not covered on the EPA Web site (e.g., information on endangered species or local environmental policies and requirements). They often do not know where to look for environmental information not held by EPA.

Understanding Information

Throughout the National Dialogue, EPA's audiences made the point that EPA serves two broadly different constituencies—everyday people and technical people—and that a one-size-fits-all approach does not offer the different levels of detail required by both audiences. Nevertheless, both lay and technical people reported that they often need help understanding the information on the EPA Web site.

People need context for the information they find

A key to understanding complex environmental issues is the ability to place data and information in the proper regulatory, ecological, economic, or other context. National Dialogue respondents indicated that they need contextual information to improve their understanding of how environmental information addresses their specific needs. Some specific contextual connections that are of high importance to users include the relationships between environmental effects and human health, risk assessment information, and better explanations of the environmental significance regulatory compliance status. People also specified their need for trend data, geospatial data, pollutant information, and information on organizations that affect the environment (e.g., regulated facilities, owner companies, industry sectors, etc.). Overall, EPA's audiences are looking for more information on what environmental data mean and how to apply and use these data.

People want more and improved descriptions of EPA's information and data

In addition to specific contextual information, National Dialogue participants broadly expressed the need for better descriptions about the data and information found on EPA's Web site. Improved descriptions are critical to

understanding and analyzing the environmental data's full meaning, *pedigree*, reliability, and quality. Some specific examples from participants include better explanations and documentation of data quality, information on how the data was collected, reasons for collecting the data, intended use of the data, level of certainty about the data, year the data was collected, names of principal investigators, and data sources. Some of EPA's external audience groups were particularly concerned that people may use data or information inappropriately if descriptions are not clear and sufficient.

People need summaries that translate complex topics into clear, easy-to-understand concepts

EPA external audiences frequently stated that they need help understanding the complex environmental resources that they find on the EPA Web site. They expressed a need for fact sheets, executive summaries, and other documents that focus on key environmental issues or topics (e.g., regulatory compliance assistance, environmental laws, key environmental programs). These documents should summarize complex issues, be easy to read, and contain links to more detailed resources. They also want these documents in a format that is easy to print (e.g., PDF) and in a variety of languages. Environmental information intermediaries noted that this requirement is particularly important to their constituents who may need access to the information but are not Web-savvy or proficient in English.

Using and Analyzing Information

In addition to enhancements that help people understand the information they find on the EPA Web site, many National Dialogue respondents expressed the desire for assistance in using and analyzing environmental information. Many of the specific issues in this category relate to a need for improved information about data quality, collection, tracking and EPA use.

People expressed a need for faster access to data but also want data quality documented

While people want EPA data to be of high quality, most feel that data should be made publicly available as quickly as possible, as long as data quality issues and concerns are clearly documented. Many audience groups expressed a desire for timely access to basic data so that they can conduct their own analyses. Others (e.g., industry representatives) were concerned about possible misinterpretation of the data and prefer that EPA conduct and provide the results of its own data analyses.

People need improved tools, models, and databases

Some National Dialogue respondents have used tools, models, and databases that are available on the EPA Web site. While they appreciate access to these resources (e.g., EnviroFacts, TRI Explorer, Risk-Screening Environmental Indicators), they expressed the need for enhancements, including clearer instructions for how to use these resources, easier user interfaces and ways to extract data from databases, and additional tools to facilitate data analysis.

New Tools and Access to Experts

Many people are interested in using new Web-based technologies to help them find, understand and use information

Most of the National Dialogue respondents are not active users of cutting-edge Web technologies. They tend to access

environmental information in more conventional formats, including electronic (e.g. Web pages, spreadsheets, databases) and print formats. They are not frequent users of newer Web-based technologies (e.g. blogs, RSS feeds, Wikis). Nevertheless, there is evidence of a growing interest in these technologies. As described above, some EPA Web site visitors use or have expressed interest in using Internet subscription feeds to obtain up-to-date information on environmental topics of interest. In addition, some respondents indicated an interest in using other Internet tools, but their specific needs for these technologies were highly variable. While there was concern about the quality of information on shared and open information sites, participants felt these tools might be appropriate for collaborative work.

In addition to technology and tools, people need improved access to *real people*

EPA information experts. All types of EPA information users indicated the need to contact EPA experts, other environmental experts, and peers with whom they can collaborate or ask questions about environmental topics. For example, educators, members of the media, industry representatives and other audience groups lamented that they cannot find names,

offices, and contact information for EPA staff who can provide expertise on specific environmental topics or refer them to experts outside the Agency. They expressed a need for an EPA directory that lists EPA staff by office and expertise, and they suggested that staff contact information be provided on EPA Web pages.

Many audience groups, representing the full scope of National Dialogue stakeholder sessions, also stressed their desire for continued and enhanced access to librarians and library resources. They view contact with librarians as a critical way to find information, understand the information they find, and conduct technical research.

Collaboration Opportunities. Many EPA audience groups are interested in opportunities to collaborate with others who are interested in the same topics or are using the same information. This includes an interest in establishing user groups around particular information resources where users can learn from the experiences of others. Several specific ideas were mentioned as ways to connect information users and experts, such as online discussion boards and expert locators. Many people suggested using newer Web technologies for future collaborative efforts.

3. Recommendations for Improving Access to Environmental Information

The foregoing analysis of EPA audience needs points to a simple, but powerful, set of conclusions about environmental information access as follows:

EPA's information audiences want to be able to find the information they are looking for more easily than is possible today. People want to be able to locate known information sources more easily. They also want to be made aware of sources of information unfamiliar to them. Documents and databases should be easy to search for relevant information. Audiences for environmental information believe that EPA should help them look for environmental information maintained by other Federal agencies.

Implement As We Go

Implement As We Go is EPA's way of moving ahead immediately with a handful of projects to address some of the audience needs for improved access to environmental information identified through comments from National Dialogue participants. *Implement As We Go* Projects introduced throughout this section will be undertaken as this *Information Access Strategy* is being finalized in 2008 and 2009.

Next, people want to be able to understand environmental information more easily. They want *information about the information* to help them determine whether an information source they find is relevant and appropriate for a use they have in mind. They want information on topics of interest to them presented so they can see *the forest* before looking more closely at individual *trees* to acquire an in-depth understanding.

Finally, EPA's information audiences want environmental information and data organized into convenient formats for easy use. These formats range between two extremes. One is a summary format, or big picture, describing a topic broadly, often for a general audience. The other is a disaggregated data format, for people who want to do their own analysis, organized in ways useful for doing environmental analysis, such as pollutant, pollutant source, and place.

EPA's information audiences believe that a variety of access tools already in use by other organizations can be employed by EPA to improve access to environmental information. Some of these tools offer powerful new ways of delivering information products and services on the Internet. However, better tools alone, they cautioned, will not always be enough. Both EPA and the Agency's information audiences will need the help of knowledgeable people with whom to discuss, collaborate, and partner with to improve access to environmental information.

The conclusions set forth above outline what National Dialogue participants mean by improved information access. They are specific improvements, or outcomes, sought by people in their ability to find, understand, and use environmental information. The conclusions go on to explain how National Dialogue participants believe these outcomes can be achieved by identifying two broad, complementary approaches for improving information access: better tools and knowledgeable people. *Better tools*, as described further below, refers to a variety of emergent information products and services, including an exciting new generation of Web-

based technologies offering finger-tip access to information resources on the Internet.

Knowledgeable people refers to the need for stronger human networks and partnerships to guide and animate enhancements in electronic infrastructure.

EPA used these two themes—i.e., what outcomes people want and how better tools and knowledgeable people can achieve them—to develop the following recommendations for improving access to environmental information.

> ### *Recommendations for Improving Information Access*
>
> **Recommendation 1**: Enable People to Find Environmental Data and Information at EPA and Other Federal Agencies
>
> **Recommendation 2**: Improve People's Understanding of EPA Data and Information to Promote Appropriate Use
>
> **Recommendation 3**: Organize EPA Information and Data into Formats that Promote Better Understanding and Facilitate Desired Uses
>
> **Recommendation 4**: Use New Web Technologies to Empower People to Find, Understand, and Use Environmental Information and Data

Recommendation 1: Enable People to Find Environmental Data and Information at EPA and Other Federal Agencies

People need better tools for searching through EPA's digital information resources. They also need guidance from information professionals to help them identify and locate print information

resources. They believe that EPA, usually their first stop when looking for environmental information, should lead efforts to simplify their search for environmental information maintained by other Federal agencies. EPA will advance this recommendation in the following three ways.

> **Implement As We Go**
> Better Search Tools
>
> ***Custom Search Folders*** help information audiences find information on specific topics of interest to them. By customizing searches using EPA's search engine to include only certain pre-specified document types, people can find what they need faster and more easily. They can also discover more information on their topic. Over 300 topic folders have been created this year.

Improve the tools available to search for EPA's digital information resources

Computer-assisted search for subject matter over the Internet is now the preferred method of finding information. Powerful search engines, such as Google and Yahoo, can help people find environmental information posted anywhere on the Internet. Software designed to catalog information for easy identification and retrieval can facilitate the task of preparing EPA's vast stores of information for easy Web access. While effective management of EPA's Web information content is within reach, the Agency must move aggressively to implement an enterprise-wide approach, for all of its offices manage valuable information resources.

Strengthen EPA's network of information specialists

EPA employs a variety of information specialists placed throughout the Agency and on telephone hotlines to help public callers and visitors find Agency information. Examples of these information specialists include public affairs staff in Headquarters and all ten Regional Offices, Toxics Release Inventory coordinators in its Regional Offices, and EPA librarians. Most of these information specialists operate as loose networks across their geographic areas of responsibility and subject matter expertise. While they focus mainly on local information requests, information specialists sometimes direct people to information resources elsewhere and provide referrals to Agency subject matter experts.

EPA's Library Network is composed of 26 facilities located in Regional offices and laboratories throughout the country. Many of these libraries specialize, either geographically (e.g., the Chesapeake Bay) or by subject (research and development). In the past, the libraries operated independently to provide local support for EPA staff and the public. By becoming a stronger national network, EPA's librarians are extending library visitors' access to specialized collections and knowledgeable librarians at all library locations.

Strengthening other networks of Agency information specialists similarly may be expected to improve the help they are able to provide people to find EPA information.

Explore possible search partnerships with other Federal agencies

Search partnerships would help people to find information maintained by EPA and partner agencies. One basic type of partnership could include navigation tools guiding people easily from EPA's Web site to pages on other Federal agency Web sites where they can begin to search for information of interest. Another more sophisticated partnership could be used to develop a federated search capability with controlled vocabulary of environmental terms used by all partners to catalog the content of their respective information resources to allow for easy identification and retrieval. Both the challenges and benefit of improving search of environmental information are multiplied when expanding the scope beyond EPA to include information available through other Federal agencies. EPA will proceed by exploring incremental improvements with the potential of someday expanding into fully federated search.

Implement As We Go
Help for Helping Hands

Navigate EPA: People often seek the help of librarians, teachers, and other information *go-betweens*, called intermediaries, to find environmental information. *Navigate EPA* is being designed by EPA to familiarize librarians, science teachers and other intermediaries with the vast resources on EPA's Web site. It is actually a set of interactive, online tools including Webinars, virtual visitor centers and podcasts. The first *Navigate EPA* tools will be available in Spring of 2009.

Recommendation 2: Improve People's Understanding of EPA Data and Information to Promote Appropriate Use

For National Dialogue participants, an improved ability to understand data and information begins with better transparency, or an illuminating view of data and information quality, reliability, and circumstances surrounding its acquisition. They also

emphasized the importance of trusted, knowledgeable people as sources of information on subjects of concern to them. The following actions would help push this recommendation forward.

Improve the transparency of EPA data and information by providing better documentation tools

People need *information about information*, known as metadata, to understand information sufficiently and use it properly. Ideally, metadata describes when, how, why, and by whom a data or information resource was developed. It should be readable by lay audiences interested in learning what questions EPA data and information is well-suited to answer for them. Metadata should be embedded in the data and information it describes to ensure its inclusion with information transfers and downloads.

Developing metadata is typically the responsibility of the individual data collector or author. To improve metadata availability and consistency, EPA needs more structured requirements and a supportive framework to assist the developers of data and information resources.

Support *front-line* providers of information

People often acquire environmental information through intermediaries—trusted sources of information who are closer than EPA to both their audiences and the environmental issues of concern to them. Examples of information intermediaries include news media meteorologists (for air quality information) and medical professionals (for chemical exposure information). They also include tribal, state, and local government agencies and non-governmental organizations. Every day, information intermediaries use their superior

vantage point to deliver environmental information to public audiences. EPA can thus help its own information audiences by better understanding and meeting the information needs of intermediaries who serve them.

Recommendation 3: Organize EPA Information and Data into Formats that Promote Better Understanding and Facilitate Desired Uses

While National Dialogue participants offered many examples of data and information uses, two major ones emerged in discussions with EPA: general and analytical uses. The following recommendations focus on these two major uses.

Implement As We Go
Navigating EPA's Web Site

Web site Redesign: EPA has been making changes to the epa.gov home page throughout the year. Visitors to the EPA Web site will already notice new graphics and features, signaling more functional improvements for the near future. In September 2008, the home page underwent a complete redesign. The new home page employs modern design principles to help users navigate EPA's Web site. Training to help front-line providers of information to EPA audiences may be necessary to help these users understand the new navigation and Web site changes.

Develop introductory materials on topics and issues for general use

General audiences for environmental information typically want to begin with a general understanding of environmental topics and issues of interest to them. Summaries of topics and issues can serve two valuable purposes. They can provide public information audiences, and the intermediaries who serve

them, with print-ready documents for use as handouts and mailings. In addition, when used as a user interface on EPA's Web site, they can introduce visitors to a topic or issue, and then guide them to more in-depth information resources.

A wealth of introductory material of interest to EPA audiences exists already, but is often located within larger Agency documents posted on EPA's Web site. Agency program priorities, for example, are simply and clearly presented in *EPA's Strategic Plan* (www.epa.gov/ocfo/plan/plan.htm) for readers who know where to look for them. The Agency's recently released *Report on the Environment* (www.epa.gov/roe) models a promising approach by introducing readers to environmental topics using general, one-page discussions that feature digital links to successively more in-depth materials. EPA can begin to address this recommendation by identifying topics of greatest interest to general information audiences and raising the profile of existing introductory materials for easier access and use.

Implement As We Go
Sharing Analytical Power over the Web

Environmental Decision Support Center (EDSC): This new initiative is envisioned as a collaborative workspace enabled by wiki technology through which EPA staff will be able to discover, access, and share a wide range of environmental data and tools. EPA staff will have the ability to populate the wiki with EPA data and tools as well as resources from our external partners. The EDCS is currently undergoing pilot testing to ensure that its services respond to known decision-making needs. The release of the EDSC for EPA use is anticipated for Spring 2009.

Deliver information in multiple formats to meet different audience needs

People access information in a variety of formats, with technology and language playing key roles. Information is increasingly accessed through electronic means. Some people, however, do not have easy Internet access and obtain information in other ways, such as through printed posters and pamphlets, telephone hotlines, face-to-face meetings, and information kiosks. For these people, and the increasing proportion of the U.S. population that speaks a language other than English, EPA must strengthen its coordination with front-line information providers to ensure that information is delivered in formats and languages that meet audiences' needs.

Organize EPA data for analytical uses

Researchers, analysts, and other more knowledgeable information audiences often want access to simple data formats that facilitate download to their computers, manipulation, and use with a variety of analytical software tools. These data formats are most useful when organized according to themes routinely used to do environmental analysis, such as regulated (polluter) facility and geography on scales ranging from local neighborhoods to regions of the country. Organizing data in this manner requires that EPA assign complete and reliable facility and geographic identifiers to its databases

Strengthen partnerships with Federal data collectors

EPA and other Federal agencies collect environmental and related information to meet their individual mission needs. To meet the needs of other audiences, however, these individual collections of data must often be fit together to achieve a mosaic effect—or holistic

picture of the environmental conditions, causes, and consequences of concern—unattainable using data from any single source. Better information partnerships among Federal, tribal, state, and local information sources are needed to combine data easily. These partnerships will rest on two pillars. The first is a commonly-held understanding of audience information needs, for which EPA should assume lead responsibility. The second is a *build to share* approach, composed of common principles of data management, especially those governing data integration, documentation and delivery, for ensuring basic compatibility of data collected by independent sources.

Recommendation 4: Use New Web Technologies to Empower People to Find, Understand and Use Environmental Information and Data

Three kinds of new Web technology are revolutionizing the delivery of information, data, and collaborative support:

- *Push* **technologies** provide rapid, electronic notification and delivery of up-to-date information to subscribers based upon their personal preferences for timing, content, and format.
- **Web publishing** simplifies the uploading of raw data to the Internet in a flexible format that allows anyone to download it to their own computers, analyze, and redistribute it to others.

- **Collaborative technologies**, such as Web wikis and blogs, can connect people with shared interests in finding, understanding, and using environmental information. EPA is testing Wiki technology as an electronic platform for informal exchanges of information and expertise between knowledgeable environmental professionals and members of the interested public.

> **Implement As We Go**
> Collaboration on Uses of Chemical Right to Know Information
>
> *ChemicalRight2Know.org:* EPA in partnering with The Environmental Council of States (ECOS) to develop www.ChemicalRight2Know.org, a one-stop point of Web access to a wide variety of information about the Toxics Release Inventory and other related environmental data. This collaborative Web site will allow EPA and other knowledgeable individuals from government, public interest groups, industry, and academia to work together in supporting efforts by the concerned public to find, understand, and use environmental information. ChemicalRight2Know.org will be showcased this Spring at the 2009 Annual TRI Training Conference.

These technologies are already widely used outside the Federal government and are beginning to be used within EPA, as described in the text box on the next page. EPA must establish a policy framework encouraging uses of these and other emerging technologies to advance the recommendations of this Information Access Strategy.

Web Technology Examples

RSS (Really Simple Syndication): EPA is using RSS in variety of ways to notify members of the interested public of news developments and new information resources. RSS is now used to alert the news media to Agency press releases. ENVIROFLASH -- an EPA partnership with local environmental and health agencies -- uses RSS to broadcast Air Quality alerts directly to government agencies and the interested public. EPA's Action Initiation List (AIL) of new regulatory projects is available as an RSS feed from regulations.gov. In the near future, innovations on EPA's Web site should make it possible for all EPA staff to create customized RSS feeds on topics of interest to information audiences.

Publishing XML Data: EPA's GeoData Gateway: The GeoData Gateway provides a single, comprehensive point of access for EPA's diverse geographic data assets. It features a common data catalog and integration tools for combining different EPA data sets. It further includes a complete directory of Web services available through other data publishers, allowing easy access to geographic data maintained outside the Agency. EPA is exploring ways to make more of its licensed geographic data available to Agency staff and government partners by establishing secured Web services for their use.

Web Collaboration Tools: Wikis and Blogs: EPA is a recognized leader in the Federal Government for its use of collaborative Web technologies, commonly called wikis and blogs. Examples of EPA blogs include the popular *Flow of the River*, featuring EPA's Deputy Administrator Marcus Peacock, *Greenversations* and *Ask EPA*. All of these blogs offer opportunities for members of the public to engage in interactive online dialogues with EPA employees. EPA also made extensive use of wikis and blogs to conduct the National Dialogue on Access to Environmental Information and develop this Information Access Strategy.

4. Next Steps

One year after EPA's launch of the National Dialogue, its many participants can claim two major accomplishments. The process has already cast new light across the broad landscape of environmental information audiences, needs and relationships. This Information Access Strategy makes recommendations that address fundamental needs identified by National Dialogue participants and carry the weight of broad public support. Foremost is the recommendation for improving the ability of audiences to find EPA information. EPA intends to give near-term priority to strengthening the search capabilities on the Agency's Web site.

Part formal study, part informal colloquy, the National Dialogue also opened new channels of communication and started fresh discussion threads with traditional EPA stakeholders. EPA intends to build upon these newly created opportunities through a continuing process of engagement with information audiences in the future. The Agency applauds the individuals and organizations that participated in the National Dialogue and invites their future involvement.

Many insights from the National Dialogue confirmed current directions at EPA and should provide renewed impetus for some ongoing efforts. The Implement As We Go projects listed throughout the Recommendations section of this document are examples of ongoing work that responds to needs identified by National Dialogue participants. Much of what the Agency learned, however, reflects the change underway in information technology. EPA's response to technology change, and to the rising tide of public expectations for improved information access, will require careful reevaluation of some current Agency practices.

Agency efforts to improve access to information will reflect our unwavering commitment to business confidentiality and personal privacy requirements.

In the coming months, EPA will take the following steps to advance the recommendations in this Information Access Strategy and consolidate the major lessons from the National Dialogue.

Develop an Access Implementation Plan

By March 2009, EPA will develop a multi-year Access Implementation Plan, calling for phased improvements under each of the recommendations for enhancing access to information by EPA staff and our external information audiences.

The Access Implementation Plan will:
- Define measurable, long-term goals for improvement.
- Propose priorities for phased implementation.
- Propose a governance structure to ensure coordination as the recommendations are implemented.

Establish an Ongoing Process for Soliciting EPA's Information Audience Needs and Monitoring the Agency's Performance in Meeting Them

The National Dialogue demonstrated the importance of active institutional learning. EPA information executives who participated in public discussions were rewarded with the clarity of insight afforded by direct discussion

with their information customers. Yet new insights inevitably raise new questions. For example:

- What information do audiences for environmental information need most?
- How do audiences use environmental information?
- How do these different audience uses support EPA's mission to protect human health and the environment?
- How can EPA better support the mission-critical uses of EPA information by information audiences?

EPA's Office of Environmental Information will work in partnership with Agency leadership to explore questions such as these in the future. The short-term aim will be to refine the priorities for action taken to implement the recommendations of this Information Access Strategy. In the longer-term, EPA will seek a deeper understanding of information audiences and their needs that may lead to new opportunities for using information access as a strategy for accomplishing our environmental mission.

Appendix. Issues on Information Access Strategy Recommendations

This appendix lists key issues that need to be addressed in order to implement each recommendation. EPA has activities underway to address many of the issues identified in this appendix. For a summary of these activities, see the list of Current EPA Activities, which is available at the National Dialogue Internet site at www.epa.gov/nationaldialogue/learn/currentactivities.pdf.

Recommendation 1: Enable people to find environmental data and information at EPA and other Federal agencies

Improve the search tools for EPA's digital information

EPA has purchased a search technology, but visitors to EPA's Web site continue to have problems finding information. At the same time, search engines from third parties have become very effective at helping people find what they are looking for.

- What is the right technology balance between licensing a search engine and outsourcing it to a search provider?
- What approach should the Agency follow to accelerate the tagging of EPA Web pages and digital documents?
- What steps should the Agency take to improve Web content management to ensure that EPA's digital information is up-to-date and relevant?

Strengthen EPA's network of information specialists

EPA employs many staff who help people find information, including a network of professional librarians. In many cases their efforts are not fully coordinated.

- How can EPA better coordinate the informal network of information specialists throughout the Agency?
- What can EPA do to better connect the Agency's professional librarians with technology and tools that provide "anywhere access" to library services?

Explore search partnerships with other Federal agencies

Most agencies provide search mechanisms for information that is on their Web sites. To establish partnerships, EPA needs to engage other agencies and resolve technical issues.

- How can EPA engage partners to coordinate search across agencies?
- What issues, e.g., technologies, taxonomies, and tagging standards, must Federal agencies agree on to coordinate search across their organizations?

Recommendation 2: Improve peoples' understanding of EPA data and information to promote appropriate use

Improve the transparency of EPA data and information by providing better documentation

Determining metadata needs is complicated by the many types of EPA data and diverse audience uses.

- How can EPA determine what metadata will be most useful to its audiences?
- What metadata guidance and support do EPA's data developers need?

Support front-line providers of information

EPA needs to better understand these information providers, their information needs, and the audiences they serve.

- What is the best way to identify the key information providers and the audiences they serve?
- How can EPA determine the information needs of these information providers?

Recommendation 3: Organize EPA information and data into formats that promote better understanding and use

Develop introductory materials on topics and issues for general use

EPA provides a vast amount of information at many technical levels. Developing introductory materials is resource-intensive and challenging, since many of EPA's programs work with complex scientific or regulatory information.

- How can EPA set priorities among various topics and issues?
- What level of detail should the Agency aim for in its introductory materials?
- How can the Agency develop these introductory materials?

Deliver information in multiple formats to meet different audience needs

Although an increasing number of people use EPA's information in digital formats, it is important to continue to support a variety of formats to match audience needs. Providing materials in multiple formats will require that EPA knows which materials and formats are most in demand and the most effective means for distributing them.

- What digital and print formats are most commonly accessed by front-line providers and EPA audiences?
- How can the Agency partner with front-line providers to develop and provide access to these materials?

Organize EPA data for analytical uses

Additional effort is required to prepare EPA data for analytical uses, make it accessible, and notify audiences of its availability.

- How can EPA determine what data and formats are most important to its audiences?
- How can EPA encourage the addition of key identifiers to its data in order to support integration?
- How can the Agency ensure that data for analysis stay current and audiences are informed of updates?

Strengthen partnerships with Federal, tribal, state, and local data collectors

Environmental information that is of interest to EPA's audiences is collected by many agencies throughout the Federal government and is maintained in different locations and formats.

- What technical issues must EPA and other Federal agencies address in order to allow EPA's audiences to integrate and analyze their data?
- How can EPA ensure that these data are easily accessed and analyzed by its audiences?

Recommendation 4: Use new Web technologies to empower people to find, understand, and use environmental information

Push technologies

Interest in push technologies is increasing and they are easy to implement, so EPA can expect increased demand for them. The Agency's infrastructure to support push technologies needs further development.

- How can EPA provide guidance and support for push technologies while encouraging innovation?

Web publishing

Most users of EPA-published data will access the data from non-EPA applications.   Indirect access will pose new security risks for EPA.

- How can EPA ensure that metadata remains easily available to users of EPA's information, regardless of how audiences obtain it?
- What are the additional security risks that Web publishing poses and how should EPA address them?

Collaborative technologies

There is a growing demand for uses of collaboration technologies by EPA staff and external partners.

- How can EPA take advantage of existing infrastructure to enable uses of collaborative technologies?
- How can EPA determine the best adoption path for these technologies?