UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

September 27, 1979

OFFICE OF THE
ADMINISTRATOR

Honorable Douglas M. Costle
Administrator
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Costle:

On May 30, 1979, you met with the Environmental Measurements Committee of the Science Advisory Board. At that time and in a subsequent conversation with Dr. Douglas Seba, the Executive Secretary for the Committee, you expressed a keen interest in and a personal frustration with the problems of information management within the Agency. We have looked at various problems and reviewed outside criticisms (Appendix A) and, as a result, offer you our suggestions, which are outlined in the attached report. We are interested in meeting with you or your designees to elaborate on our suggestions and to discuss alternatives, should you so desire. We recognize that both the good reputation and success, as well as the morale, of the Agency rest heavily on the types of decisions to be made in carrying out constructive and corrective actions for information management.

Our primary recommendation is that the Agency develop an overall, Agency-wide information policy. From the information thus far received the Committee concluded that this overall policy must be endorsed and given managerial authority by the Administrator of the Agency. Further, the Committee feels that encouraging cooperating divisions to mutually consider and develop an overall policy has not worked in the past, as indicated by plans and suggestions offered to the Committee by documents and by Agency staff and consultants (Appendxes A and B). Consequently, the Committee has suggested alternative ways of developing and implementing an overall policy, as are also outlined in the attached report.

Basically, the data collected by the Agency is program (i.e., source)- oriented, toxics data in one section, permits data in another, and water quality data in still another section. The Committee feels strongly that this system causes a serious lack of logic and coordination of EPA's data. To overcome this problem, the Committee suggests that under one policy, the data be arranged not according to where it came from, but according to how it relates to pressing environmental problems. Such a system, which is the result of overall guidance and policy, would be problem-oriented rather than program- oriented.

Employing this as a starting point would not only best serve all types of users in the country, but would best serve the Agency as well. It is the type of nucleus upon which the most efficient and cost saving system can be constructed, since its objective is to answer the questions most often posed by critics. The Committee requests that the Administrator take our recommendations into consideration.

We wish to emphasize that the avoidance of parochialism in developing and implementing such a policy is of the greatest importance. You may note the failure of information coordination among cooperating divisions in the past, as well as the inaccessibility of much of EPA's data. We do not recommend the use of existing administrative councils for the same reason. Our suggested alternatives for policy execution underscore the need for an individual manager responsive to the needs of users and devoted to the purpose of overall information management in the long run, as well as the short term.

The overview is respectfully submitted to you accompanied by our strong belief that a progressive solution to the issue can be attained within the Agency. We're looking forward to your reply.

Sincerely,

Leonard Greenfield, Chairman
Environmental Measurements Committee
Science Advisory Board

Attachments

Environmental Measurements Committee Overview and Recommendations for Solving Information Problems EPA

All decision-making requires basic information which is pertinent and of high quality. We deliberately emphasize the phrase "all decision-making" and then give weight to the fact that responsibility for the correct application of data lies, or should lie, within every administrative, congressional, and judicial office as well as in offices in the private sector. If decision and action are not based on information, high-probability-of-chaos will be the important statistic of the future. Indeed, some of the existing problems in government, the results of which are directly visible to or consequent upon a sensitive public, must be due, at least partly, to a famine of pertinent information.

This famine of information may be caused only in part by insufficient information. In fact, an equal or greater problem may be that of finding and applying the data available. Imagine the trouble, expense, and thought going into the collection of facts needed to make an important decision, only to have it lost because of problems in data storage and retrieval.

Despite the requirement of information for input into decision-making, the government, for the most part, does not assign <u>any</u> priority to the need for information -- much less a high or low priority. It does not assign it a budgetary importance; many instances may be given of agency budget cuts borne most heavily by information branches. It pays no heed to the extreme need for the organization, centralization, and distribution of data within its purview. The government's attitude is cavalier, at best, towards the requirement of specific information sought by citizens acting as private users.

In EPA, this problem is very evident, and both commission and ommission errors have been elaborated on in a number of documents (Appendix A), along with curative suggestions and suggested mechanisms. These documents orginate both within the Agency and from outside communicators and consultants (Appendix B). (Some of the consultants are former EPA employees.)

Notwithstanding such documentation, the first step in resolving the problems associated with the production and management of information in the Agency must be an acknowledgement and recognition that the problems exist. Outside critics have been insisting so for several years, but the nature of these problems have not been well understood or clearing defined.

Second, the Agency must agree upon the nature of the information needed. Instead, the definition of what is needed, in the past, has been left initially to the producers of data or to ADP consultants setting up data base systems. This internalized thinking has failed fundamentally to recognize that information encompasses a great deal more than what exists in formal information systems. The documentation referred to in Appendix -does not indicate that any formal canvass has ever been made of users of data. Users are the public. They consist of office and laboratory personnel within the Agency, Federal, state, local, and regional government officials and their technical staffs, and individuals and groups in the private sector. Users can also be the producers of information. We have data from bureaus and offices that relate the numbers of inquiries successfully answered each year--questions that come from all kinds of users. Without belaboring the area of numerology, EPA should be receiving and answering queries in quantities far beyond the numbers indicated by such EPA data. EPA should have the reputation for doing so, thus becoming an Agency sought after by users as one that is both good and reliable. Because it is not, EPA must recognize that the concept of information and information management is not understood by the senior management of the Agency. In our opinion, this is one of EPA's major deficiencies with regard to this problem. Users are the final judges of the success or failure of any information system design, implementation and evaluation, and yet EPA has not considered the users as important.

Logic then leads us to inquire about the attributes of a good information system: What are the types of questions to be answered? What are the requirements for pertinent data of high quality? How may the data be stored best so that answers to questions may be easily obtained? How may the user learn the proper language to obtain the data? All are fundamental inquiries into the process and success of the system. Yet we have little evidence that these questions have ever been asked by senior Agency management.

A slightly different point of view is that an good agency, with a good repretation, which answers its mission successfully, is one whose information-distribution system is a matter of pride. In fact, the success of the agency can be directly related to this and is often judged by it. In effect, the information-distribution system should be a showcase of how data are to be taken and dispensed. Instead, critics (OMB, OMB, Congress, NAS) constantly complain about the paucity, quality, and inaccessibility of EPA's data.

We believe that the positive road toward solving this problem is first the establishment of an Agencywide information policy. The recent efforts of the DAA Advisory Group on Monitoring and Information Management is a first step, but only a first step. We feel that a longer-range solution must encompass the following recommendations. It is not our purpose to elaborate on such a policy, only to urge its adoption by the Administrator. These recommendations and alternatives are presented for consideration at the strategic level, based upon discussions among ourselves and with consultants working with us.

The strength of the proposed information policy is thus partially defined by the following:

1. It shall be Agencywide.

2. It will be principally defined by the ultimate users of the system.

The following recommendations ask some basic questions. The answers to these questions will reveal what previously has been overlooked or ignored and will, in turn, dictate exactly how the policy must be shaped.

Many of the recommendations are discussed in the appended documents. (They should be examined first before any of the following are treated as new recommendations.) The recommendations in this document vary in that they are based on the principle that the users of data will dictate the type of system(s) and policy to be devised. Most of the appended documents, though perhaps stating otherwise, do not deal with the problems from the viewpoint of the user, as they do not understand the nature of the user problem.

Before presenting the recommendations, however, a comment on the term "data" is called for. One part of the data recovery problem is that data are often treated as isolated facts. In reality a datum is part of a continuum within some system. Within the Agency, data are not the private purview of any group or individual and, therefore, should not be defined by any one group or individual. Treating or defining data in isolation not only leads to duplication and frustration for the user, but also treats the "rights" of the user in a cavalier fashion. Once defined and collected, the data become the responsibility of the Agency, which must insure that it is properly stored as part of a continuum and ultimately distributed to those who need it. That mandates a basic change in philosophy for the Agency, namely, again, the recognition that all data, even those seemingly unrelated, must be integrated and controlled under a single policy.

Suggested recommendations for the establishment of a coordinated information management policy are as follows:

1. Survey past information data plans that have been proposed to determine their merit. Look at case studies that may have been presented. Ascertain their feasibility and what they have in common. Develop a plan for integrating information management and monitoring data on an Agencywide scale.

2. Second, make a formal canvass of user needs. Ask users, particularly at the Administrator and senior management level, what specific current systems they employ to get their data and have them put a value on them. Ask them about the type of documentation library they prefer. Survey both users and producers of data to learn what kinds of information they need and their patterns of usage in terms of actual examples. Compare user-defined needs with plans developed in step 1.

3. Determine from users inside and outside EPA what specific uses and types of questions they adress to EPA, which are and are not answered by the present information systems.

4. Review recommendations made by other agencies.

5. Use the revised information management plan to develop an on-going policy with end-users as its pivotal base. The plan should include periodic re-surveying of users to reflect changing needs and priorities.

The Committee suggests that the following be considered as a trial for establishing a new central information policy and its mechanisms:

1. Develop policy level support from the Administrator to insure that there is compliance, cooperation, and enforcement for the trial of pilot systems or demonstration projects.

2. The plans for pilot systems should be presented in the form of seminars to the people, at specific levels, who are responsible for policy execution, with sufficient discussion and feedback to be sure they understand the principles involved.

3. Select an office or Agency branch to try a pilot operation and test for success, failure, or alteration to fit.

4. Select a Coordinator (we strongly suggest one individual rather than a coordinating group) who will act in the capacity of policy manager for the pilot and for demonstration projects. Such an individual should make sure standards are developed, urge cooperation among program decisions and act as an ombudsman for the Agency and users. Ultimately, this coordinator's job should evolve into the job of an assistant administrator responsible for information within the Agency. This person would be responsible for accomplishing all efforts to conform with the information policy generated by the Administrator. These efforts would include: establishment of standards; coordination of all systems endeavors; development and maintenance of a cooperative agency policy; control of appropriate resources such as budget and personnel; and management of information policy for program divisions such as libraries, publications, monitoring and data collection, ADP and distribution.

The above trial project would involve primarily EPA personnel and would also help refine and develop the newly established information policy and its mechanisms. Once a policy is agreed upon, there must be a proclamation from the Administrator that the authority lies with a single manager for enforcing the policy Agencywide. Part of this authority is within a specific budgetary line. It connotes the ability to offer funds, in return for which the grantee must conform to whatever is necessary to keep up the quality and currency of the data. Unless backing for this type of managerial authority is obtained from the Administrator, all efforts toward a coordinated system would be largely wasted.

From the information thus far received (appendix -), the Committee concluded that there first must be an endorsement of this managerial authority by the Administrator. Only then may efforts proceed toward a coordinated system. Encouraging cooperating divisions to mutually consider and develop an overall policy has not worked in the past, as indicated by plans and suggestions offered to the Committee by documents and by Agency staff and consultants.

Employing this as a starting point not only best serves all types of users in the country, but best serves the Agency as well. It is the type of nucleus upon which the most efficient and cost saving system can be constructed, since its objective is to answer the questions most often posed by critics. The Committee requests that the Administrator take these recommendations into consideration.

Appendix A

Documents Consulted

ADP stage assessment and five-year ADP management plan. Briefing book. April 9, 1979. Nolan Norton & Co. One Military Drive, Lexington, Mass 02173. Also final presentation revised May 15, 1979.

EPA Blue Ribbon Monitoring Group. February 14, 1979. Technical support document for specific study. Ensuring that EPA monitoring data are available to all parts of EPA and ensuring that area-wide monitoring surveys are tracked in a central location. Internal document.

Options to improve management of Information Technology with the Federal Government, Consolidated Information Technology Report, Executive Office of Administration. Portions A-21-23.

User values in the selection of information services. Final report on NSF Contract C 1027. Homer J. Hall, Exxon Research Engineering Co., N.J. 07036, 1977.

Development of management specializations. Commission on Federal Paperwork, IRM Report, Sept. 9, 1977.

Needed: A comprehensive information management act. Forest Woody Horton, Director, Information Management Study, Government Data Systems.

A study of CSIN: The Chemical Substances Information Network Report.

NIH-EPA Chemical Information Systems, Report #9. June 30, 1979.

Environmental/Chemical Thesaurus. June 1978. Oak Ridge National Laboratory. ORNL/EIS-132.

U.S. Directory of Environmental Sources (3rd Edition). Jan. 1979. National Focal Point of the United Nations Environment Program/International Referral System for Sources of Environmental Information (INFOTERRA).

Guide to EPA Libraries. July 1977. EPA Lib-77-02.

AEROS: Aerometric and Emissions Reporting System. EPA Office of Air and Waste Management Office of Air Quality Planning and Standards RTP, N.C. June 1978.

Perspectives on Technical Information for Environmental Protection. Volume I: Analytical Studies for the U.S. Environmental Protection Agency. National Academy of Sciences; Washington, D.C. 1977.

Development of Marketing & Recommended Outputs for ORD's Technical Information Program. Volumes I and II. Final Report Calculon Corp. Contract No. 68-03-2522 June 2, 1978.

Data Backgroud Paper. EPA Monitoring and Information Management. Internal Paper Program Evaluation Division, June 21, 1979.

Better Information Management Policies Needed: A study of Scientific and Technical Bibliographic Services. Report to the Congress by the Comptroller General, General Accounting Office, August 6, 1979.

NOAA Policy on Management of Environmental Data and Environmental Science Information. NOAA Directives Manual 16-11. December 9, 1971.

Appendix B

Presentations to the Committee

1. Ms. Patricia Berger, Chief, Library Systems Branch, OPM
2. Mr. Kerrigan Clough, Special Assistant to the Administrator
3. Dr. Homer Hall, Information Analysis Project Director, Rutgers University, Consultant to the Committee
4. Dr. Steve Heller, Office of Chemical Information, OTS
5. Dr. Kent Hughes, Deputy Director, National Oceanographic Data Center, NOAA
6. Mr. John Krobock, Associate Professor Lehigh University, Consultant to the Committee
7. Mr. Calvin Lawrence, Deputy Director, Environmental Research Information Center, ORD
8. Ms. Marion Mlay, Director, Program Evaluation Division, OPM
9. Mr. Les Needles, Vice President, Sigma Data Computing Corp.
10. Mr. Neil Ruzic, Island for Science, Inc., Consultant to the Committee
11. Dr. Sidney Siegel, Senior Science Advisor, OTS
12. Ms. Libby Smith, Chief Librarian, EPA, Research Triangle Park, N.C.
13. Mr. Morris Yaguda, Chief, Information Planning & Coordination Branch, OPM

Year	Document	Purpose	Methodology	Techniques
1975	Literature & Library Service Requirements	1) Det. current lit. & library service needs 2) Est. cost of mtg needs 3) Examine effectiveness of services to meet needs 4) Identify performance factors 5) Formulate alternative ways of mtg these requirements (Allow mgt to evaluate library services)	Survey of EPA employees. All levels, functions, regional offices, research centers, & headquarters.	Personal interviews, Small group conversations Formal mtgs (311 randomly selected employees who completed 2 written questionnaires and maintained daily reading records on 2 randomly assigned days per week) (32% of 6,160 employees surveyed are engineers, 30% admin. and mgrs.; 25% physical-biological-medical scientists, 7% lawyers, 5% social scientists.)
1976	Technical Literature Search Systems of EPA Findings & Recommendations	1) Analyze the technical literature search systems of EPA 2) Determine need for such systems 3) Develop an action plan by which needed systems may be developed in an orderly fashion. Included solid waste info. retrieval systems (SWIRS) Noise info. service (NOISE) Air pollution technical info. center (APTIC)	N.A.	N.A.
1978	Initial Report of TSCA Inter- Agency Testing Committee to Ad.. EPA		N.A.	N.A.
1979	ADP Stage Assessment & Five Year ADP Management Plan	1) To determine if automated info processing effectively meets EPA's business needs 2) If not, what should EPA do differently.	Interviews (70 EPA Managers - 13 DAA's & 57 Div. Directors or other user managers; 45 ADP Staff Members; Written Evaluations >200 of EPA's major systems analyzed. Document reviews > 100 EPA documents reviewed.	
	Noble	Air & Water Pollution	N.A.	
	Blue Ribbon	N.A.	N.A.	
1977	NAS	N.A.	N.A.	
1979	DAA Committee on Monitoring and Information Management	N.A.	N.A.	

Problems						
Uncertainty about What Info. is Available	Uncertainty about Where Info. can Be Found	Too Much Info. to Digest	Too Much Trouble to Get Matrls.	Unavailability of Raw Matrls.	Lack Effective Mgt. Direction. Control & Coordination	Lack of DP Coordination
X	X	X	X	X		
		Could include all of these - insufficient knowledge of usage & holdings, limited cost data, limited system usage, lack of data			X	X
(------ User Awareness Varies Widely, All Above Could Apply ----------)					X	X
					X No Available System With Data Complete and Assuredly Accurate.	X
X	X	Widespread Lack of Knowledge of Already Collected Monitoring Data and Information				X
X	X	X	X	X	X	X

Inappropriate Resource Allocation	Lack of Readily Available & Consolidated Chemical Data Source	Few New Systems Being Delivered	Low Organizational Experience with Mainframe On-Line & Data Base Tech	No ADP Organization to Make Things Happen	EPA's DP Activity Dissipated Leaderless
X					(Could Be
	X				
	X (Critical Info Needs Not Being Addressed)	X	X	X	X
				X	X
X					X

Recommendations

Develop a More Effective Approach For Keeping Employees Current on New Materials	Establish a PGM to Assist People to Organize and Control Personal Collection of Books, Etc.	Develop More Selective Appeals for Promoting Utilization of Most Library Services	Develop Familiarization & Training Pgm for Current Non Users & Infrequent Users with Services	Explore Possibility of Centralizing Acquisitions
X	X	X	X	X

(---------- Could Include All Above ----------)

X

Review Infrequently Used Services for Cost Benefits	Explore Possibility of Examining Degree to Which Literature Conforms w/Job Performance	Establish a Comprehensive & Uniform Information Dissemination Policy	Establish a single Technical Literature Coordinator Centralizes Standardize Monitoring	Consider Commercial Search Services
X	X			
		X	X	X
		X		
			X	X
		X		
			X	
			X	

Redesign Current Search Systems If Operation Necessary	Requirements for Cross Organization and Cross Media Data Mgt Must be Met	Realign ADP Funding & Skill Mix Strategies	Data Resource Mgt Process Need Significant Improvement	Appoint Information V.P.
X			X	
	X	X	X	
	X			
	X	X	X	

Centralized Function
to Provide Integrated
Data Assessment

Review & Evaluate
Current and Proposed
Information Handling System

x

x

x

x