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EPA RESEARCH AND DEVELOPMENT GUIDANCE

FISCAL YEARS 1980/81

U.S. ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C.

APRIL, 1979

FOREWORD

This year marks the first time that EPA's Office of Research and Development has participated in the Agency's annual Guidance activities. The document which follows represents a significant step forward in our continuing efforts to improve communication and coordination between the research laboratories within the Agency, and the program offices which use research results in their day-to-day activities.

CONTENTS

The Research and Development Guidance contains two parts. The first is the Policy Guidance, in which Administrator Costle, Deputy Administrator Blum, and the Assistant Administrators set forth their goals and priorities for the coming two fiscal years. The Policy Guidance is followed by a Research Guidance for each of the nine media (including Energy and Interdisciplinary) which have programs within ORD. The Research Guidance for each of the media contains, first, a Media Overview written by the program office, describing the program's priorities and objectives for 1980 and 1981. Following the Media Overview is a section, written by ORD, outlining specific research priorities.

ROLE OF MEDIA TASK GROUPS

Each of the Research Guidances was reviewed by its appropriate Media Task Group. These groups, with representatives from Headquarters and Regional offices, were responsible for reviewing the Guidance for consistency with the goals set forth by the Administator/Deputy Administrator and the AA's. ORD representatives on these Groups played an important role in providing information about research priorities and activities, and brought an important critical perspective to the proposals contained in the draft program Guidances. As activity within the Media Task Groups shifts toward the ZBB ranking, ORD representatives should continue to play an important role in examining the Agency's priorities along with representatives from other offices.

BUILDING COMMUNICATION

The discussions within the Media Task Group, including the common review of Guidance and the MTG ranking to come, are still just first steps in the necessary process of strengthening the links between research and program personnel within EPA. The next step -- actually using a framework of common assumptions, improving joint planning, increasing "teamwork" on Agency projects, and implementing the choices and priorities described in the Guidance -- will take place in the twelve Research Committees which ORD has established to ensure closer coordination of its research plans with the needs of its regulatory "consumers". These working groups will play a vital role in the translation of necessarily broad media guidance into a set of concrete plans for conducting specific research programs in FY 80 and 81.

OPERATING PLANS AND BUDGET

We encourage research personnel to study this Guidance carefully. It contains information you will need in drawing up your FY 1980 Operating Plans and FY 1981 Budget. In particular, Media Task Groups will review all Decision Unit submissions for consistency with those priorities set forth by program and labs in the Guidance. Research projects which fulfill priority information needs for EPA operating programs can expect to benefit from this review.

* * * * *

We hope that this Research Guidance can become a regular fixture of the Agency's planning and budgeting activities. It has great potential as a tool for coordinating the many and diverse efforts going on within EPA and increasing our ability to learn from each other. The many talented personnel within the Agency are our greatest resource for finding better ways to protect our environment. The success of this Guidance will be measured by how well it helps us work together to get this job done.

EPA RESEARCH AND DEVELOPMENT GUIDANCE
FISCAL YEARS 1980/81

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ADMINISTRATOR'S POLICY GUIDANCE

1980/1981

DOUGLAS M. COSTLE, ADMINISTRATOR

BARBARA BLUM, DEPUTY ADMINISTRATOR

ADMINISTRATOR'S POLICY GUIDANCE

EPA and State and local agencies can be proud of what they have accomplished over the last two years. We have won strong legislative mandates, and we are making good progress in implementing them. EPA is better integrated, and we have begun the process of strengthening our State and local relationships. We are making good progress in developing effective controls for toxics. In area after area we are recognized front-runners in the Administration's reform efforts. The air and the water are getting cleaner. The people, the President, and the Congress support our work: they respect both our professionalism and our ability to get a tough job done.

This Guidance addresses the future. But before we go on to define what lies ahead, we wanted to note how far EPA has come. The Agency has been working hard and well. Congratulations and our thanks.

In this Agency Policy Guidance we identify what we feel the Agency's priorities should be for the next several years. Our Assistant Administrators follow with more detailed guidance for each of their areas of responsibility. We have worked closely with them in developing these program guidances.

Broadly stated, the Agency's priorities are as follows:

- To reduce public exposure to dangerous pollutants;
- To protect sensitive ecological systems; and
- To improve management of our environmental programs.

REDUCE PUBLIC EXPOSURE TO DANGEROUS POLLUTANTS

Over the last several years we have come to understand more of the connections between the thousands of chemicals our society has put into our environment and a great many of the diseases that afflict modern man. EPA has been given lead responsibility for identifying, evaluating, and controlling environmental pollutants. Doing so is one

of our chief objectives. We are approaching the problem at every point -- when a chemical is produced, shipped, used, or ultimately disposed of. Our Toxics, Air, Water, Pesticides, Drinking Water, Radiation, Hazardous Waste, and spills programs must all give the toxics problem greater priority. In doing so we expect that all action on individual pollutants should generally be governed by the principle of addressing first those that present the greatest health risks. A major part of that effort has been the development of an integrated strategy for toxic substances, a strategy which we will continue to develop and refine throughout 1980 and 1981 through vigorous implementation of the Toxic Substances Control Act.

As another element of an Agency-wide toxics strategy, we will develop an Agency cancer policy. The policy will provide a framework for continuing decision-making in our pesticides, toxics, and drinking water programs and for emerging carcinogen regulations under the Agency's air, water, and hazardous waste programs.

Finally, our urban strategy is a key part of this effort because it is based on attacking the unhealthy environmental conditions of cities. We expect the Assistant Administrators and you to continue to implement our existing urban initiatives and to develop innovative solutions for urban problems.

PROTECT SENSITIVE ECOLOGICAL SYSTEMS

Increasingly during the past two years, we have focused the Agency's efforts on dealing with pollutants as they affect public health. Ultimately, however, we must protect the environment that supports us and all other life. While continuing to clean up our air and water, we need to give much more attention to particularly sensitive environmental systems such as wetlands. Though natural systems like wetlands and fisheries are usually described as renewable -- on the assumption that they can regenerate themselves when depleted or damaged -- we are beginning to learn how fragile they truly are as we begin to understand sensitive ecological relationships. Once a groundwater supply is contaminated with toxics, for example, it may take centuries for natural restoration (or millions of dollars for clean-up) if it is ever to support healthy natural life or to be used for drinking water.

IMPROVE MANAGEMENT OF OUR ENVIRONMENTAL PROGRAMS

We have made a major commitment to finding better, more effective ways of regulating. There are almost fifty reform efforts in progress across the Agency now. We are beginning to see the results of this commitment, and we expect a great many more initiatives to move into implementation stages over the next several years. We will continue to look for complements to traditional regulation, such as offsets and the bubble, our reporting requirements, sunset, and procedural simplifications. We want your active help in finding better ways to carry out our responsibilities. Specifically, we want to continue to:

- Integrate EPA programs -- We have made a good start in our efforts to consolidate our grant and permit programs. The integration of programs in water quality, drinking water, solid waste, hazardous wastes, and underground injection can serve as a good model for other program areas.

- Strengthen Federal/State/local partnerships -- Establishing the State/EPA Agreements and encouraging appropriate delegation should strengthen and improve environmental programs at all levels. We also need to retain and improve our ability to assess performance at all levels. We want to work for passage of an Integrated Environmental Assistance Act as a legislative base for increasing management flexibility between us and the States as well as in State programs.

- Improve coordination with other Federal agencies -- We must make greater use of the IRLG and Regulatory Council mechanism to assure coordinated and concerted action among all Federal agencies. We must work particularly closely with the Department of Energy in developing environmentally and health sensitive energy policies.

- Reform and refine our management practices -- In this area we are emphasizing the completion of Civil Service reforms recently enacted. We must also put in place the planning, zero-based budgeting accountability system for the Agency.

In addition, we are reassessing our monitoring with an eye to the quality, utility and compatibility of our information systems.

- Improve regulatory reform -- We are giving major emphasis to the development of more flexible, less costly alternatives to our traditional regulatory approaches, such as the "bubble" concept and "banking" of offsets in nonattainment areas. We want to continue improving the quality of our regulations. One of the most important elements to the latter is continued strengthening of the Steering Committee; we want to enlarge the role of the Regions in this process.

- Strengthen the Agency's research capacity and programs -- We want to improve our ability to forecast environmental problems and solutions, particularly in the long term. We need to expand the data base for our regulatory decision-making.

Finally, there are a number of cross-cutting issues we want to flag. We expect:

- a strong commitment to improving public participation;

- a determined affirmative action program; and

- continued attention to the Administration's urban programs.

* * * * *

The 1980-1981 planning years present a great challenge to us as managers. We must continue to move this Agency toward protecting public health and the environment more fully. We expect that each participant in this planning will consider how his or her program can contribute to these initiatives.

The following sections of this Guidance set forth our priorities in greater detail. They serve as the basis for FY 1980 Federal and State program implementation and as the policy framework for program and resource recommendations to the President for FY 1981.

Douglas M. Costle
Administrator

Barbara Blum
Deputy Administrator

ASSISTANT ADMINISTRATORS' OVERVIEWS

RESEARCH AND DEVELOPMENT

AIR, NOISE, AND RADIATION

WATER AND WASTE MANAGEMENT

TOXIC SUBSTANCES

ENFORCEMENT

PLANNING AND MANAGEMENT

OFFICE OF RESEARCH AND DEVELOPMENT

Overview Statement of Priorities and Goals

Stephen J. Gage, Assistant Administrator

During the next two years, three major objectives will be driving the Environmental Protection Agency's research and development program: (1) continuing the integration of the Office of Research and Development into the mainstream of the Agency's activities, (2) enhancing the Office's capability to provide the scientific and technological data the Agency will use for future regulatory and enforcement actions, and (3) improving that data through scientific peer review of research procedures and results, quality control of risk assessments, and quality assurance of monitoring data.

Much of the groundwork for achieving these objectives has been laid during the past year. The Research Committees have been quite successful in planning research in five critical areas jointly with the Program Offices. A significant Public Health Research Initiative ($37 million, 46 positions) was developed and successfully defended with OMB through the cross-agency zero-based budgeting for toxics. A new Office of Health and Environmental Assessment, building on the successful experiences in scientific assessments by the Carcinogen Assessment Group and the Environmental Criteria and Assessment Office, has been proposed. Other developments have also built a good foundation for future action.

INTEGRATING ORD INTO THE AGENCY'S MAINSTREAM

Joint planning of the Agency's research and development activities through the five pilot Research Committees already provides a very valuable linkage between the regulatory program offices responsible for developing regulations and the ORD scientists and engineers supporting the regulatory efforts. During early 1979, we will establish seven new Research Committees to cover the joint planning of substantially all of the research in support of regulation and enforcement. Each of the 12 committees will be specifically oriented to the users of the research information, typically Program Office Deputy Assistant Administrators or, in some instances, Division Directors (see Attachment A).

The new Research Committees will develop multi-year research strategies oriented toward supporting regulatory needs; identify research outputs required within the next budget year (now beginning the FY 1981 cycle); seek the required resources through the Agency's ZBB process; and monitor and evaluate ongoing and completed research. We must make special efforts during this formative period to bring more fully the Agency's enforcement and Regional programs into the joint planning process. In the interest of cost-effectiveness, it will be necessary for the Regional Offices to coordinate their participation and share responsibility for representing Regional interests in the Research Committee; ORD will support the Regional Offices in this effort.

We will continue to experiment cautiously with matrix management approaches as a means of improving the coordination and delivery of high-visibility, short-term research outputs. Matrix management of the diesel emissions program will continue, and we will consider establishing a limited number of similar programs, such as in Acid Precipitation.

Closely related to the evolution of the joint research plannng approach is the long-overdue simplification of ORD'S planning and reporting systems. We must take this step to bring ORD's planning and management approaches into synchronization with (1) the five-year plan developed in the preparation of the Agency's Research Outlook, (2) the multi-year plans developed by the Research Committees, and (3) the Agency's ZBB review and decisions. We must also eliminate the redundant paperwork that absorbs too much ORD staff time.

In order to improve accountability for the research and development efforts, we must bring into operation a reliable tracking system for the critical outputs required by the Program Offices as identified by the Research Committees. As a corollary, we must also reduce to a manageable number the outputs to be tracked. While we must have adequate information to monitor progress of the key outputs, we must vigorously resist spending too much time and effort reporting preliminary and fragmented data. Good research management means monitoring the right indicators, not all of the possible indicators, of orderly progress toward objectives. Too much reporting together with overspecification of research investments will counterproductively tie the hands of the research managers and stifle innovative research. Management flexibility must, of course, be coupled with accountability.

With the increased pressure for higher quality management of several key research areas, we will be realigning the laboratory reporting relationships to consolidate functional or discipline groupings. These changes, which should improve morale and productivity, will allow us to improve the implementation of the Agency's research efforts. Specifically, the realignment will establish an office for health effects research management; an office to integrate environmental transport, fate, and effects research; and an office to integrate control technology and hazardous waste research.

BUILDING A RESEARCH FOUNDATION FOR AN IMPROVED DATA BASE

We made important progress in the past year in starting the long-term process of building a foundation for a significantly improved scientific and technological data base for the future regulatory and enforcement actions of the Agency. Planning and budgeting the Public Health Research Initiative was a critical first step, but it was only a beginning.

We must now commit ourselves to the detailed planning and implementation of the Initiative. Since the Initiative represents the first significant expansion of the Agency's basic environmental health sciences, we must wisely dedicate it to achieving a solid understanding of human health effects caused by both direct and indirect environmental exposures. Because we will be drawing heavily on scientific talent in the private sector to assist us in this effort, we must begin immediately to seek the best scientific advice available to help us in this planning effort.

The second critical step, a broad environmental research initiative, must be taken immediately. Because of the heightened awareness in the Administration of EPA's requirements for the best scientific and technological data that can be developed for the Agency's comprehensive environmental regulations, we now have an excellent opportunity to seek a government-wide review of environmental research. This review will focus on how existing and future Federal resources can support broader based, longer term environmental research to build an improved data base. We must assume the leadership in developing the conceptual framework for such efforts, bringing to bear on the program design the best scientific advice available. We must look to the Agency's Science Advisory Board, the President's Office of Science and

Technology Policy, and the National Academy of Sciences as well as numerous individual scientists in this comprehensive planning and review effort. We are now in the process of developing a select set of initiatives for 1981 and beyond, focusing on protecting humans from environmentally mitigated pollutants; identifying and protecting critical components of ecosystems from injury; and addressing the more global problems of protecting our life support systems.

In parallel with these activities, we must carefully review the longer-term research already underway in ORD to assure ourselves that we are directing our attentions to the most important future problems and are using the best scientific talent we can attract to work on these problems. We must determine if we are obtaining high quality, well-documented results from our research grants -- the primary mechanism we have for supporting innovative ideas. We must make the scientific community more widely aware of our research grants, encourage much greater competition for those grants, and ensure that they are awarded strictly on the basis of merit through enhanced peer review. We should also see if alternative approaches for handling these longer term grants can relieve the burdensome monitoring loads placed on the individual laboratory researchers.

An invigorated, competitive grant program for longer-term research in each research area, coupled with an expanded Anticipatory Research Program, will provide the Agency with an important new base of exploratory research. It is essential that, with the significant infusion of new funding associated with the Public Health Research Initiative, we do not waste this opportunity to build a firmer foundation with the help of the best scientific talent available in the country.

IMPROVING THE QUALITY OF DATA USED IN DECISION MAKING

Scientific and technological data come in many forms and in varying quality. The credibility and integrity of all data used in Agency decisions is a prerequisite for any analyses. The evaluation and synthesis of the data is an essential step in informing the many far-reaching regulatory decisions. We have made significant progress during the last year in providing carcinogenic risk assessments for the Program Offices and in improving the capability of ORD to prepare Air and Water Quality criteria documents by establishing the new Environmental Criteria and Assessment Offices in Research Triangle Park and Cincinnati.

We have not yet, however, undertaken the special responsibility assigned by the Administrator to provide quality control of the Agency's risk assessments. With approval of ORD's new Office of Health and Environmental Assessment (OHEA), we must now move ahead, first to quickly develop guidelines for the several types of risk assessments required for the Agency's regulation development, and then to exercise oversight to ensure that the asssessments prepared by the Program Offices conform reasonably to the guidelines. We must also proceed to staff OHEA with the best qualified people we can attract from the scientific community, significantly upgrading in this process ORD's capability to provide consultation to the Program Offices and, upon request, assessments of specific chemicals.

Although we in ORD have discussed the role of peer review extensively during the past year, we must now act in the coming year to build into all of the Agency's scientific and technological efforts appropriate review mechanisms. We must begin with enhanced peer review for individual research projects. The ORD senior laboratory management must convey to the professional staff strong support for and assistance in periodic external peer review of individual projects. Whenever feasible, the results of individual projects should be subjected to rigorous scientific or technological scruntiny through publication in referred journals. We should also see that the results of our grants and contracts are published in peer-reviewed journals, slowing the growth of that body of EPA-published "gray literature" which now constitutes the <u>only</u> publication channel for too much of our work. Publication of research results in the peer-reviewed literature must become an important criterion for advancement in <u>all</u> of our laboratories.

In addition to peer review of individual research efforts, we must systematically review our research programs. While such reviews may begin at the laboratory level, it is usually more appropriate to conduct them at the level of the Deputy Assistant Administrators or even of the Assistant Administrator. Since the Research Committees will be providing the primary focus for the bulk of our research activities, it is logical that we direct our attention increasingly to programmatic reviews along the lines of the committees. We should also be mindful of other mutually supporting programmatic areas which may provide results for several committees, such as biological screening tests, analytical methodologies, etc.

Finally, we have been expanding in the past year our efforts to provide support to Agency laboratories for quality assurance of environmental monitoring data. We must now assume the lead for improving the quality assurance of all of the environmental monitoring data used in the Agency's decisions. We must first make sure our house is in order by requiring adequate quality assurance practices for all environmental quality monitoring, sampling, and analytical activities conducted in the ORD laboratories or by our contractors or grantees. This policy should become effective immediately. We must also require, through the Blue Ribbon Monitoring Task Force, similar quality assurance practices for all of the Agency's laboratories, contractors, and grantees. Lastly, we must work closely with the Regional Offices to bring quality assurance practices into uniform use in all of the State and local laboratories, which provide the bulk of the environmental quality data available to the Agency.

OFFICE OF AIR, NOISE, AND RADIATION

Overview Statement of Priorities and Goals

David G. Hawkins, Assistant Administrator

PUBLIC PARTICIPATION AND INFORMATION

Each OANR program plan should include resources and should plan for effective participation. Limited resources should also be available for case-by-case assistance to participants in a small number of major rulemaking and/or permit proceedings.

I would also like OANR offices to work with Regional Offices to develop effective public participation programs for their activities.

Finally, each office should review existing public information materials in its area of responsibility. Program plans should provide for major improvements in our information base and should include a system for keeping our public information materials current. Please work with our Office of Public Awareness representative in this effort. Our laws, particularly the Clean Air Act, are complex but their purposes and effects can be simply explained. We must make more of an effort to do so.

AIR

High priority must be given in 1980 to completing all actions required as a result of State implemention plan submissions in 1979. Most plan approvals, disapprovals, and promulgations should be completed in 1979, as should the schedules for implementing the plans. However, some such actions may not occur until 1980. We must have in place systems for tracking State progress in implementing their approved plans. We need to emphasize and develop ways of assuring that the States assume their responsibilities under the plans including all new source review responsibilities. It is especially important that we encourage States to implement the program for Prevention of Significant Deterioration.

During 1980 programs for visibility protection and Prevention of Significant Deterioration for pollutants other than TSP and SO should be ready for implementation. States should be urged to assume responsibility for these programs as well.

The next major round of SIP revisions will be in 1982 for those areas where EPA has granted extensions beyond the 1982 deadline. Our guidance requires that for ozone these areas base their revised plans on an air quality model. It appears that the most appropriate technique for protecting future air quality in this round of SIPs will be the relatively complex dispersion models which account for photochemical reactions. We should give high priority in 1980 to the acquisition of data required for these models and to validating them. The 1981 program plan should provide for the use of these models in all areas where required in a time frame that permits technical review and public participation on development of control strategy to assure meeting the Clean Air requirements.

The general problem of lack of confidence in air quality data also must be addressed in 1980. Emphasis must be given to the establishment of technically sound sites and procedures for National Air Monitoring Stations (NAMS) and State Local Air Monitoring Stations (SLAMS) as required by our monitoring regulations. Participation by State/local laboratories in quality assurance programs should be mandatory. If the programs require additional resources, this should receive a high priority in the 1981 budget request.

At Headquarters, by December 31, 1890, we must have completed our review and appropriate revision of all existing ambient air quality standards. The plan for 1980 should clearly recognize this requirement and, given the need for a better quantification of benefits, provide for the development of such a data base and analyses as may be required.

The budget for 1980 provides funding to complete the development of new source performance standards for all major stationary sources by 1982. The program plans for 1980 and 1981 must demonstrate that we are on a schedule which will meet that statutory deadline.

No large increment in resources is being provided in 1980 for activities related to hazardous air pollutants. I expect that, before the next fiscal year begins, we will have in place a policy on air carcinogens providing a systematic approach to substantially reduce risks from air-borne carcinogens. Our plan in 1980 should provide for the orderly implementation of that policy with a major intensification of actions in 1981. This program should take into account and be coordinated with other programs regulating risks from toxic or hazardous pollutants.

In Mobile Sources we should have completed all vehicle rulemaking specifically required by the Clean Air Act in 1980. Our future standard-setting program should address the need to regulate presently unregulated pollutants, and resources to address the light-duty diesel should be available in 1980 in the event that research establishes the need for additional action. Our 1980 program should focus on such assessment activities as may be necessary if standards are to be proposed in FY 1981 or subsequent fiscal years.

Given commitments to inspection/maintenance programs in the SIP's, we must be in a position of being able to provide expert guidance to State and local I/M programs. The 1980 plans should address, as a matter of priority, such data gathering and assessment as may be necessary to assure that we can assist I/M programs to achieve their maximum potential.

We should give major attention to other activities which will help assure that vehicles in use perform as intended, and the 1980/81 plans should specifically address this concern. In particular, we should continue to examine test procedures to improve their relation to real-world problems.

NOISE

In FY 1980 I think that every effort should be made to become current with our previous commitments to regulate new products. New commitments should be limited until we are assured that the backlog of previous identifications and/or proposals can be eliminated. If we take on new efforts, they should focus on transportation-related concerns.

To the extent the 1980 budget is not adequate to complete the required pre-regulatory work for light duty vehicles and tires, the Agency should not make formal commitments. These sources would then be a major initiative in the 1981 budget.

Although I am attracted by the idea of using noise labeling as a method of enhancing consumer choice, I believe we should complete promulgation of the general labelling and hearing protector regulations first. Any proposal for additional work in the labeling area in 1980 must be carefully tailored to fit within available resources and my desire for us to complete pending actions. An expanded program may be considered in 1981, but it should have a lesser priority than work related to transportation sources.

I am anxious that we show material progress in implementing the Quiet Communities Act. To the extent that our stated goals of 400 communities and 40 States with effective noise programs provide a real basis for program planning, our program plans for both 1980 and 1981 should clearly indicate projected progress against these goals.

We should likewise display our actions to undertake investigations and studies on a more complete health base for noise control against a specified objective. I think it important that we develop an outline which indicated the areas in which new information should be produced on a priority basis and that our proposed research-related plans in both 1980 and 1981 indicate how they will meet our needs as outlined.

RADIATION

In radiation the mission of EPA is now reasonably well defined as a result of the IRG Report, Libassi Committee deliberations, NRC Agreements, and our own actions in developing criteria for waste disposal. The IRG Report indicating the multi-agency nature of the Federal government's nuclear waste management program should be used as a blueprint for defining the scope of and timing required for EPA standard-setting in this area. The program focus in 1980 should be on actions delineated in that report.

The priority we give to actions under the Clean Air Act must be a product of the reduction in radiation risk which such actions can accomplish compared to reduction achieved in other radiation programs. To the extent that priority must be given to the issue of radioactive waste, and/or to the completion of standards required under the Uranium Mill Tailings Act, I am willing to accept a slower rate of progress on Clean Air Act-related problems in 1980. Nevertheless, the program plan for 1981 should present a full range of actions to effectively implement our determinations on the nature of radioactive air pollution problems, we should assign them high priority.

Given the acknowledged limitations of our resources, I would expect only limited EPA resources devoted in 1980 to implement EPA's general authorities to provide Federal radiation guidance. I would much prefer that we take time to establish an interagency committee to review the potential scope of the guidance function and assess priorities as our major program action in the guidance area in 1980. Implementation of the committee's recommendations would follow in 1980 and 1981. Additional resources for EPA in 1981 could be sought where necessary to supplement the resources of other agencies.

OFFICE OF WATER AND WASTE MANAGEMENT

Overview Statement of Priorities and Goals

Thomas C. Jorling, Assistant Administrator

The priority objectives of EPA's Water and Wastewater Management programs are to implement statutory mandates providing for:

- Achievement and maintenance of the physical, chemical, and biological integrity of the Nation's ground and surface waters, with special emphasis on protection of public health and sensitive aquatic ecosystems;

- Treatment, containment, and control of toxic and hazardous materials in solid waste;

- Protection of an adequate supply of high quality drinking water for public consumption; and

- Federal, State, and local development of integrated environmental management systems which minimize transfers of pollutants between media and which identify optimal ultimate disposal strategies for pollutants.

The objectives described above can be achieved most efficiently in terms of both dollars and manpower through:

- Effective use of State planning and program funds to implement water quality management, water supply, and solid waste management goals through State/EPA Agreements;

- Management of the $4 billion/year construction grants program to meet the treatment needs of publicly owned treatment works (POTW's) effectively at least cost to all levels of government;

- Application of alternative, innovative, and cost-effective technologies and management practices to solve water and solid waste pollution problems; and

- Emphasis on resource recovery, reuse, and recycling to conserve energy, materials, and water.

The objectives and management tools to achieve them will be delivered within a context of program integration and consolidation. An integrated focus for the Agency and for OWWM in particular arises because the Resource Conservation and Recovery Act (RCRA) closed the gaps in the waste disposal cycle left by previous air and water legislation by providing control for the disposal of pollutants in or on the land. Since there is no "free dumping ground", an integrated approach is necessary to determine the best mix of environmental controls to minimize the adverse effects of pollution. These integrative efforts will be manifest in the way we deal with identifiable areas of control or regulation. For example; many programs within OWWM act on specific chemicals. When one program is dealing with a chemical, it is imperative that all programs regulating that chemical share knowledge, experience, and implementation.

Integration of water quality, water supply, and solid waste programs will generally occur at the State level via the State/EPA Agreement process. EPA will encourage States to conduct integrated problem assessments, develop long-term strategies to solve their water and waste management problems, and commit to one-year work programs to implement their strategies. In return, EPA will supply program and planning grants from the Clean Water Act (CWA), Safe Drinking Water Act (SDWA), and RCRA to assist the States that undertake integrated approaches.

An integrated State/EPA agreement process is a logical outgrowth of the Water Quality Management (WQM) program, which is a key focus of the Office of Water and Waste Management. The major goal of WQM is the development of a State and local decision-making process to control point and nonpoint sources of pollution. Current WQM efforts are concentrated on plan implementation to achieve water quality improvements. Continuing WQM grants will only be made to State and areawide agencies who can show evidence of implementation.

In managing the $4 billion/year construction grant program, the Agency will consider publicly-owned treatment work systems as a structural and functional component of human community. This should enable questions relating to levels of performance and technology, operations and maintenance, sludge management, pretreatment, toxics, combined storm water overflow and urban drainage to be viewed as parts of a single system.

EPA's strategy for 1980-81, then, is to orient funding toward meeting environmental requirements through stringent cost-effectiveness review and to stress innovative and alternative approaches to waste treatment, including water and energy conservation, reuse and recycling of pollutants, and small systems. Funds earmarked for State delegation under Section 205(g) of the CWA will be directed toward State assumption of program activities with high professional quality consistent with Congressional policy and requirements. In addition, the construction grant program will move rapidly toward reinforcing other Agency actions such as the control of toxics and enforcement objectives through implementation of the municipal enforcement strategy.

Industry is a key focal point for the application of technology and management practices to control environmental pollution. The multiple controls on industry must be applied in a coherent way to a single facility or industry category to control toxic and hazardous pollutants effectively. The available control mechanisms include spill prevention control plans; best management practices for toxics; BAT, pretreatment, new source performance standards, and BCT; RCRA hazardous waste controls; and underground injection control (UIC).

This arsenal of controls will be implemented coherently through consolidated permitting of NPDES, RCRA Section 3005, and UIC permits. Permit consolidation will enable concentration on programmatic, environmental, and procedural permitting elements which allow technical and legal talents to be applied effectively and efficiently to achieve environmental objectives.

All OWWM programs will emphasize conservation of our precious natural resources: energy, water, minerals and other materials. The resource recovery program will strive to maximize the use of energy and materials which are currently disposed of as solid wastes. Municipal and industrial point source control programs will stress reuse of wastewater and recycling of pollutants through standards, permits, and financial assistance. In particular, the construction grants program will focus attention on multi-purpose projects which recover energy and materials and reuse wastewater.

Four final OWWM priority areas are: attention to specific ecosystems; development of criteria and standards; implementation of new OWWM public participation regulations; and emergency response.

- An important focus is on specific ecosystems or subsets of ecosystems, such as: ground water as it is influenced by the programs of OWWM; wetlands protection as it is specifically achieved by the regulatory program under section 404, and wetlands as influenced by such other factors as solid waste facility siting, treatment systems siting, and others. The oceans represent another ecosystem which is high priority and can only be protected by the integrated application of OWWM programs.

- Another integration of OWWM activity ranging across all programs is in development of criteria and standards. Water quality criteria, 404 criteria, 403 criteria, safe drinking water standards, and hazardous substance criteria all will be looked at as they are developed, issued and applied.

- Overall public participation regulations for water quality, water supply and solid waste programs, which were promulgated in February 1979, will be implemented in 1980. These regulations support program integration objectives by standardizing certain public participation requirements for OWWM programs. They should foster more effective and constructive public involvement across these programs.

- 1980 must see the emergency response capabilities of OWWM integrated so that the various authorities under the Safe Drinking Water Act, Resource Conservation and Recovery Act, and the Clean Water Act are carried out in a coherent way by adequately trained people. We must build on the emergency response capabilities already in place under section 311 and expand them to recognize that the response is attentive not just to surface waters but also to ground waters and to the landscape and atmosphere.

OFFICE OF TOXIC SUBSTANCES

Overview Statement of Priorities and Goals

Steven D. Jellinek, Assistant Administrator

This Overview Statement lays out what I believe to be the important priorities for achievement by the pesticides and toxics programs for the years 1980 and 1981. As such, it represents my "guidance" to the managers and staff of the two programs and information of interest to our colleagues throughout the Agency.

I have arranged the objectives for each into "general" and "specific" categories. The specific objectives are subdivided further into "highest" priority, "high" priority, and "other." We have no low priority objectives.

The general objectives are provided to give a sense of what I believe are the thrust and tone of the programs. The specific objectives are more in the nature of outputs I expect to be delivered.

TOXICS--1979

General Objectives

- Continue the thrust toward institution-building. From the organizational perspective:
  - Secure adequate space.
  - Staff up to budgeted levels with qualified professional and support personnel, with special efforts on increasing the number of women and minorities.
  - Organize to the branch level.

From the regulatory perspective:

- Place more emphasis on premanufacture review, test standards, and test rules.

- Give less emphasis to existing chemical regulation.

o Complete the development of a priority setting system for choosing chemicals for testing and regulation under TSCA and other statutes; clarify and establish the role of the Toxic Substances Priorities Committee in this system.

o Develop a detailed program planning system for each DAA-ship.

o Clarify the regional role in TSCA implementation.

Specific Objectives

Highest Priority

o Publish the Chemical Substances Inventory.

o Promulgate the final regulations on premanufacture notification; establish and operate a system for screening and assessing notices; and take actions under TSCA sections 5(e) and 5(f) to prevent or control the manufacture of new chemicals, as required.

o Promulgate a final regulation establishing test standards for oncogenicity, chronic toxicity, combined oncogenicity and chronic toxicity, and good laboratory practices.

o Propose the first section 4 test rule requiring industry to test 20-30 chemical substances and categories of substances.

o Propose a rule under section 8(a) to develop basic use/exposure information on approximately 2-3,000 chemicals to aid in setting priorities for regulation.

- Propose a regulation under section 6 banning or limiting the use of one existing chemical that poses an unreasonable risk to public health.

- Fully implement the program to help States and school districts identify and control asbestos in school buildings.

High Priority

- Propose testing guidelines for premanufacture notification.

- Propose remaining test standards for health effects and several fate and ecological effects test standards; resolve inconsistencies with pesticides testing guidelines.

- Conduct health and environmental effects assessments, monitoring, and economic impact analyses to support regulation of new and existing chemicals.

- Follow premanufacture notices with individual "significant new use rules" and/or individual section 8(a) information rules for a few selected new chemicals, as required.

- Begin the development of generic follow-up systems for "significant new use rules" and section 8(a) information rules for new chemicals.

- Begin developing proposed regulations banning or limiting the use of an additional 2-4 existing chemicals that pose an unreasonable risk to health or the environment.

- Complete an analysis of the issues concerning the impact of testing costs on small volume chemicals and, if appropriate, develop proposed legislative solutions.

- Continue the development of TSCA and interagency chemical information systems and data bases.
- Complete the development of responsive and effective document control data services, and FOI procedures.
- Develop model rules for information gathering under section 8(a).

Other

- Develop a process to review and act expeditiously on carcinogens, mutagens, and teratogens under section 4(f).
- Initiate the development of generic approaches to banning or controlling the use of chemicals under section 6.
- Promulgate the PCB ban rule.
- Provide industry assistance on TSCA requirements.
- Distribute State grants.
- Continue development of public participation programs.
- Support OECD and other planned international harmonization programs.
- Propose model regulations under section 8(c) and 8(d) to require recordkeeping and submission of health and safety studies concerning significant effects of chemicals.

TOXICS--1980

General Objectives

- Continue the thrust toward institution-building. From the organizational perspective:

- Staff up to budgeted levels with qualified professional and support personnel, with special efforts on increasing the number of women and minorities.

- Build effective staff teams through management actions and training.

From the regulatory perspective:

- Fully operate premanufacture review and test rule development.

- Increase emphasis on existing chemical regulation, both individual and generic approaches.

o Operate a priority-setting system for choosing chemicals for testing and regulation under TSCA and other statutes, in conjunction with the Toxic Substances Priorities Committee.

o Operate a detailed planning system for the toxic substances program; initiate formal evaluation; modify program design, as needed, to increase quality and quantity of output; develop, jointly with the R&D community, specific program requirements for high priority research; examine the need for major legislative changes in 1981.

Specific Objectives

Highest Priority

o Fully operate the premanufacture notification review process; take actions under sections 5(e) and 5(f) to prevent or control the manufacture of new chemicals, as required.

o Promulgate the section 4 test rule proposed in 1979; propose and promulgate additional test rules.

o Conduct health and environmental effects assessments, monitoring, and economic impact analyses to support regulation of new and existing chemicals.

- Promulgate the section 6 regulations proposed in 1979 banning or limiting the use of one chemical; propose section 6 regulations for several additional existing chemicals.

- Promulgate the section 8(a) information rule on 2-3,000 chemicals proposed in 1979.

High Priority

- Promulgate final testing guidelines for premanufacture notification.

- Propose and promulgate model rules under section 8(a); promulgate model rules for sections 8(c) and 8(d).

- Promulgate the full set of health effects test standards and the fate and ecological effects test standards proposed in 1979; propose additional fate and ecological effects test standards.

- Futher develop and begin to use generic follow-up systems for "significant new use rules" and section 8(a) information rules for new chemicals.

- Publish the revised chemical substances inventory; maintain the integrity of the inventory.

- Develop proposed regulations implementing generic approaches to regulation under section 6.

- Begin partial operation of TSCA and interagency chemical information systems and data bases; continue systems development.

- Review and act expeditiously on carcinogens, mutagens, and teratogens under section 4(f).

Other

- Begin reviewing existing test standards as required by section 4.

- Begin review of overall economic and innovation effects of TSCA.

- Provide industry assistance on TSCA requirements.

- Continue to develop public participation programs.

- Support OECD and other planned international harmonization programs.

TOXICS--1981

General Objectives

- Achieve institutional maturity. From the organizational perspective:

  - Have a stable organization in place with technically and managerially qualified staff.

From the regulatory perspective:

  - Fully operate all major program components.

  - Balance emphasis on regulation of new and existing chemicals.

- Operate an integrated priority-setting system for choosing chemicals for testing and regulation for TSCA and other statutes, in conjunction with the Toxic Substances Priorities Committee.

- Operate a detailed planning and evaluation system for the toxic substances program; explore alternatives to established regulatory approaches.

- If appropriate, develop and support proposals for major legislative changes.

Specific Objectives

Highest Priority

- Fully operate the premanufacture notification review process at an improved level; take actions under sections 5(e) and 5(f) to prevent or control the manufacture of new chemicals, as required.

- Promulgate and propose regulations under section 6 with greater emphasis on generic approaches, banning or limiting the use of a significantly greater number of existing chemicals that pose unreasonable risks to public health.

- Conduct health and environmental effects assessments, monitoring, and economic impact analyses to support regulations of new and existing chemicals.

- Continue promulgating rules under sections 4 and 8 to obtain data to support assessment and regulation.

High Priority

- Revise testing guidelines for premanufacture notification to provide more specific guidance.

- Complete fate and ecological effects test standards; review existing test standards as required by section 4.

- Use routine, generic follow-up systems for "significant new use rules" and section 8(a) information rules for new chemicals.

- Complete chemical information systems development; operate systems, services, and data bases at full scale.

Other

- Continue actions under 4(f).

- Maintain industry assistance.

- Continue to develop public participation programs.
- Support international harmonization programs.
- Continue TSCA overall economic and innovation impact studies.
- Evaluate and refine operating programs.

PESTICIDES--1979

General Objectives

- Continue the thrust toward institution-building. From the organizational perspective:
  - Secure adequate space.
  - Staff up to budgeted levels with qualified professional and support personnel, with special efforts on increasing the number of women and minorities.
  - Complete the reorganization; fill senior line positions.

  From the regulatory perspective:
  - Place more emphasis on completing major RPAR actions, initiating conditional registration, establishing the registration standards process, and making registration decisions on new chemicals with adequate hazard data.
  - Give less emphasis to large-scale operation of the registration standards process.
- Develop management systems for expediting decisionmaking on high volume operations, such as registration and registration standards.
- Develop a detailed program planning system.
- Clarify the regional role in FIFRA implementation.

Specific Objectives

Highest Priority

- Review benefits and risks of 15-20 RPAR compounds identified as posing potentially unreasonable adverse effects.

- Reach 17-23 final risk/benefit determinations on RPAR compounds.

- Implement the conditional registration program.

- Process 25-30 new registrations, 5,000-5,600 administrative/technical amendments and 2,000-2,500 routine/intrastate registrations in an efficient, effective manner.

- Give registration priority to new chemicals for which complete hazard data are submitted.

- Inititate the preparation of 42-47 generic standards, including the reassessment of associated tolerances.

- Evaluate the scientific basis of the system for establishing tolerances, including consideration of inert ingredients in order to revise tolerance regulations.

High Priority

- Provide timely and responsive guidance to the States relative to their FIFRA section 5(f) experimental use permits and review 180-240 section 5 registrations in a median turnaround time of 120 days.

- Review 1,000-1,500 section 24(c) special local needs registrations and conduct overview activities on their final actions.

- Review 170-220 section 18 emergency exemptions in a median turnaround time of 4 weeks, including full scientific review of pertinent data.

- Develop proposed guidelines for biological pesticides.

- Establish 80-120 pesticide residue tolerances and review 75-100 amendments for food and animal feed crops after review of data and risk/benefit analyses in a median turnaround time of 105 days.

- Accelerate the program to classify pesticides for restricted use. Aim for completion in 1980.

- Develop and initiate procedures to require early testing to fill data gaps on existing compounds instead of waiting until such gaps are identified in the development of generic standards.

- Integrate IPM into the RPAR process and into regulatory actions (e.g., section 18 emergency exemptions) when technically appropriate.

Other

- Audit 50-70 testing laboratories.

- Develop more precise procedures for handling confidential business data.

- Conduct training program.

- Improve FOI response procedures, so that all requests are given an initial response within 10 days and a final response as quickly as possible.

- Monitor for hazard prediction and significance of potential problems.

PESTICIDES--1980

General Objectives

- Continue the thrust toward institution-building. From the organizational perspective:

  - Build effective staff teams through management actions and training.

From the regulatory perspective:

- Emphasize completion of the remaining RPAR reviews, increasing production of registration standards, and registration decisions on new pesticide chemicals.

- Initiate reregistration of existing pesticides.

o Operate priority-setting systems for selection of chemicals for the registration standard process and for priority registration decisions.

o Operate a detailed planning system; initiate formal evaluation; modify program design, as needed, to increase quantity and quality of output; develop, jointly with the R&D community, specific program requirements for high priority research.

Specific Objectives

Highest Priority

o Review benefits and risks of 12-17 RPAR compounds identified as posing potentially unreasonable adverse effects.

o Reach 15-20 final risk/benefit determinations on RPAR compounds.

o Implement the conditional registration program.

o Give registration priority to new chemicals for which complete hazard data are submitted.

o Reregister 1,000-1,400 products from available generic standards.

o Complete the generic standards initiated last year, and initiate the preparation of 40-50 generic standards, including the reassessment of associated tolerances.

High Priority

- Provide timely and responsive guidance to the States relative to their section 5(f) experimental use permits, and review 180-240 section 5 registrations in a median turnaround time of 120 days.

- Review 1,000-1,500 section 24(c) special local needs registrations and conduct overview activities on their final actions.

- Review 170-220 section 18 emergency exemptions in a median turnaround time of 4 weeks, including full scientific review of pertinent data.

- Promulgate guidelines for biological pesticides.

- Establish 80-120 pesticide residue tolerances, and review 75-100 amendments for food and animal feed crops after review of data and risk/benefit analyses, in a median turnaround time of 105 days.

Other

- Audit 50-70 laboratories.

- Improve FOI response procedures, so that all requests are given an initial response within 10 days and a final response as quickly as possible.

- Monitor for hazard prediction and significance of potential problems.

PESTICIDES--1981

General Objectives

- Achieve institutional maturity. From the organizational perspective:

- Have a stable organization in place, with technically and managerially qualified staff.

From the regulatory perspective:

- Fully operate all major program components.
- Substantially complete RPAR.

o Operate an integrated priority setting system.

o Operate a detailed planning and evaluation system.

o Intensify strategy for replacement of older pesticides with unknown or hazardous effects with new, safer pesticides and alternative pest control actions.

Specific Objectives

Highest Priority

o Integrate the RPAR process into the generic standards production process.

o Give registration priority to innovative, environmentally protective compounds.

o Reregister 1,000-1,400 products from available generic standards.

o Complete the generic standards intiated last year, and initiate the preparation of 40-50 generic standards, including the reassessment of associated tolerances, with attention to detail and quality.

High Priority

o Provide timely and responsive guidance to the States relative to their section 5(f) experimental use permits, and review 180-240 section 5 registrations in a median turn-around time of 120 days.

- Review 1,000-1,500 section 24(c) special local needs registrations, and conduct overview activities on their final actions.

- Review 170-220 section 18 emergency exemptions in a median turnaround time of 4 weeks.

- Establish 80-120 pesticide residue tolerances, and review 75-100 amendments for food and animal feed crops after review of data and risk/benefit analyses, in a median turn-around time of 105 days.

Other

- Audit 50-70 laboratories.

- Improve FOI response procedures, so that all requests are given an initial response within 10 days and a final response as quickly as possible.

- Monitor for hazard prediction and significance of potential problems.

OFFICE OF ENFORCEMENT

Overview Statement of Priorities and Goals

Marvin B. Durning, Assistant Administrator

This guidance builds upon the top priority activities set out for enforcement in the EPA Policy Guidance for FY 1979/80. The activities described are our top enforcement priorities, not a complete list of all enforcement activities. These priorities are stated as programmatic priorities and as management-institutional priorities, but the two are obviously interrelated.

PROGRAMMATIC PRIORITIES

Enforcement in Emergencies

All EPA, State, and local enforcement personnel should give top priority to any true emergencies involving substantial threats to public health and safety. Containment and removal of the dangers is, of course, the top priority. Follow-up on penalties for violations can be undertaken in the course of other enforcement, rather than as an emergency. This guidance applies, of course, to emergency enforcement response to hazardous spills.

At this time in FY 1979, EPA personnel have as their top priority the investigation and prevention of substantial and imminent hazards created by existing or abandoned chemical waste sites. Those efforts will continue as facts may dictate. We expect a large number of civil actions of this nature in FY 1980 and 1981.

Major Source Enforcement Effort

The major source enforcement effort against violators of the Air Act and Water Act is our next highest priority after emergency situations. Enforcement against these major sources is critically important to accomplishing our environmental goals. It is directed against that small minority of major sources which failed to meet the requirements of the Air and Water Acts by the statutory deadlines. It includes many of the most serious and most recalcitrant sources of pollution in the country. By bringing these sources into compliance, with penalties where appropriate, we will keep

faith with the great majority of firms and public bodies which met their responsibilities and will build the confidence necessary to continue voluntary compliance with all the environmental laws.

In FY 1980, Regions and States will bring the major source enforcement actions to decision by settlement, administrative process, or court trial, including appropriate penalties, and make or defend appeals. By the end of FY 1980, the major source drive should be nearly completed, with only a few actions and appeals still pending in trial or appellate courts. In FY 1981, actions and appeals still pending should be completed as rapidly as possible.

Enforcement against Automobile and Truck Pollution

Because of the great public health and environmental significance of air pollution from automobiles and trucks, especially in urban areas, enforcement against mobile sources of pollution will continue to be a top enforcement priority in FY 80/81.

EPA enforcement will continue to ensure that new vehicles meet emission standards. We will increase our emphasis on maintaining the effectiveness of emission control systems throughout the period of their use. To achieve this, EPA's main emphasis will be on inspection and maintenance systems in the major nonattainment areas for auto-related pollutants, supplemented with Headquarters audits and I/M programs.

- To ensure that new vehicles meet standards, EPA enforcement will continue our assembly line audits, recall and warranty efforts.

- To ensure that cars in use meet standards and to support introduction of inspection and maintenance systems where needed, EPA will continue to focus investigations and enforcement actions (a) on national or regional fleets, chains, dealership or repair facilities, or "pattern" violations and (b) in major metropolitan areas where auto pollution is high and I&M will be introduced. EPA will encourage State and local anti-fuel switching and anti-tampering efforts.

We will use private, State, or local contracts to carry out inspections to ensure the availability and purity of unleaded gasoline, and the installation and operation of vapor recovery systems on fuel delivery trucks and at gasoline outlets.

EPA and the States, in cooperation with other agencies, will implement any programs authorized to control the leaded-unleaded gas price differential and other authorized environmental/energy programs.

Consolidated and Simplified Permitting

EPA is consolidating its permit programs, both to simplify administrative steps and to get all important environmental problems addressed in a single process. By October 1, 1979, companies will be able to submit just one application for all water, solid and hazardous waste permits, go through one review, and be issued one permit. We expect application forms for air quality permits to be consolidated in late FY 1980 (or early FY 1981). NPDES second round permits under the Clean Water Act will be issued throughout FY 1980/81. We will begin to issue hazardous waste permits in late FY 1980, accelerating in FY 1981. We will also start issuing Underground Injection permits in FY 1981.

In all permitting activities, we will give first priority to large or major sources with serious adverse health effects, including those with significant toxic discharges.

Full Federal Compliance

President Carter has directed all Federal facilities to come quickly into compliance with Federal, State, and local environmental requirements.

By the end of 1980, we expect all, or almost all, Federal facilities both major and minor sources will be in compliance. Regions should see to it that all Federal facilities do indeed come into compliance as soon as possible. EPA will ensure that Federal agencies request necessary funds for compliance by reviewing the agencies plans included in the annual A-106 report.

EPA is encouraging the States to assume these responsibilities for Federal facilities. The States should find the managers of Federal facilities cooperative. EPA will assist the States in getting any disputes resolved.

Stationary Sources

Completing the Major Source Enforcement Effort continues to be of highest priority in FY 1980/81, including the monitoring of compliance orders to ensure that sources comply with the terms of the orders. We also want to ensure that major sources comply with new requirements placed on them by SIP revisions and by the ambient standards for lead, and to enforce new source performance standards and national emission standards for hazardous air pollutants.

As the Major Source Enforcement Effort is completed in FY 1979/80, EPA will design and implement an improved program of compliance monitoring and enforcement to ensure continuous compliance.

During FY 1979, regulations will be promulgated for administrative assessment of noncompliance penalties under Section 120 of the Clean Air Act. This program should be fully implemented during the second half of FY 1979 and throughout FY 1980/81. Prompt implementation of these penalties should assist in obtaining and maintaining compliance with the Air Act.

Water Enforcement

Completion of the Major Source Enforcement Effort, including actions against publicly owned treatment works (POTW's), continues to be of highest priority in FY 1980/81. As this effort is completed, EPA will design and implement an improved program of compliance monitoring and enforcement to ensure continuous compliance.

Beginning in FY 1979 and growing in importance in FY 1980/81 will be advice and assistance to delegated States so that State pretreatment programs can be established and the conditions of those programs enforced. During FY 1981 the activities of assisting and advising States and POTW's, modifying permits to incorporate pretreatment requirements, approving POTW treatment programs, notifying affected indirect dischargers, and determining treatment levels should be at their peak level and of prime importance if we are to achieve compliance by all affected POTW's and indirect dischargers by FY 1983 or FY 1984. NPDES permits will be issued as part of the consolidated permits program.

Strategies for New Programs (TSCA, RCRA, SDWA, FIFRA)

In recent years, Congress has provided new programs and has amended existing statutes to respond to the threats of chemical poisons, hazardous wastes, and pesticides, and to protect drinking water supplies. We must carefully devise or revise enforcement strategies under the additional provisions of the Toxic Substances Control Act (TSCA), the amended provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the hazardous waste provisions of the Resource Conservation and Recovery Act (RCRA), and the Safe Drinking Water Act (SDWA).

Under RCRA, our priority enforcement activities in FY 1980/81, in addition to responding to emergencies, include monitoring and enforcing the notification program (Section 3010); reviewing proposed State programs for enforceability and adequacy; issuing permits, monitoring permitted sites, and ensuring that Compliance Schedules are met; and monitoring and enforcing the manifest systems.

Under TSCA, our compliance monitoring and enforcement will initially focus on PCBs, chlorofluorocarbons, inventory requirements and to premanufacturing notice requirements. We will continue our special investigative efforts regarding the accuracy and truthfulness of laboratory test data in the toxics and pesticides programs.

Under FIFRA, during FY 1980/81 EPA will attempt to develop cooperative enforcement grant programs with the remaining seven States (for a total of 50) and will continue to enforce regulations on pesticide use until States assume this responsibility.

Under SDWA, EPA will respond to emergency situations threatening public health and will concentrate on enforcement of primary drinking water standards, particularly in non-primary States.

Noise Control

The noise enforcement program will continue to ensure compliance with standards and requirements for products and procedural labeling as its top priority. Although urban noise can often be controlled through State and local efforts, it continues to be a Federal responsibility to ensure that products meet the standards established under the Noise Act. EPA Headquarters will carry out this function.

MANAGEMENT AND INSTITUTIONAL PRIORITIES

In addition to the preceding programmatic priorities, we have a number of management and institutional improvements as top priorities. These improvements have to some degree already been described in the programmatic priorities and they obviously interrelate with them.

- Consolidated Permitting -- EPA will consolidate and simplify its permitting activities, mostly during FY 1979 and totally by the end of FY 1980. It will assist and encourage States to do so as well.

- Industry Enforcement Strategies -- During FY 1979 and FY 1980 EPA will develop and implement industry enforcement strategies for selected industries.

- Continuous Compliance -- We will develop programs for ensuring continuous compliance by regulated sources, including compliance monitoring (and information systems for recording and tracking compliance), penalties to remove the economic benefit of non-compliance and remote sensing techniques.

- Improved Oversight of State Enforcement -- During FY 1979 and thereafter, Headquarters and Regional personnel will begin to apply standards of performance to State enforcement activities under all Federal grants or contracts for enforcement.

- Management and Management Information Systems -- During FY 1979 and FY 1980 as needed, we will review our management, reporting, and information systems (including ADP systems). Our emphasis will be on improved accuracy, usefulness, simplicity, and compatability.

- Improved Cooperation with Other Agencies -- During FY 1979, 1980, and 1981, we will improve our cooperation with other agencies, such as the Department of Justice, the other members of the IRLG (OSHA, FDA, and CPSC), the Securities Exchange Commission (SEC), and the Departments of Energy and Interior.

- Innovative Methods -- Throughout FY 1979, 1980, and 1981 the Office of Enforcement will explore innovations such as widened use of penalties to remove economic benefits of delay, environmental auditing, and contracts or grants with citizen groups.

- Investigating Criminal Violations -- During FY 1980/81 EPA enforcement will improve its ability to investigate criminal violations of environmental laws by recruiting and training EPA investigative personnel.

OFFICE OF PLANNING AND MANAGEMENT

Overview Statement of Priorities and Goals

William Drayton, Jr., Assistant Administrator

The Agency's central management objective remains that of creating a national environmental program that derives strength and initiative from decentralization and purposiveness and environmental coherence from effective integration. Toward these and other ends we must strengthen our analytic and common services in a number of areas. This guidance deals first with that central objective, then with other objectives connected with our analytic and common services.

AN INTEGRATED, DECENTRALIZED PROGRAM

From its inception EPA rejected the top-down, overcentralized, untrusting Louis XIV/Herbert Hoover form of management common to most government organizations, a form that has failed. Instead we are building on the philosophy of the Federalist Papers: decentralize and democratize within a realistic set of incentives designed to ensure organizationally responsible results.

Not only are we doing what makes sense for EPA, but we're setting the pace for others. That's why others in the government have quickly recognized so many of our reforms as models.

No matter how satisfying being out front is, however, it doesn't make ground breaking any easier. Although we've come a long way, we still have several years of intense work ahead of us:

(1) We should continue to strengthen our regulation development and zero-base budgeting. They provide the structure that makes possible broad involvement in the Agency's two principal cross-cutting areas for decision making: respectively, (a) regulation and policy development and (b) priority setting, management, and resource allocation. Regulation development is mature, and ZBB is over the worst of its start-up pains. Both need continuing adjustment and strong support.

The Regions should contribute more heavily to regulation development and review, especially regarding operational and resource issues.

Last year ZBB focused heavily on process; henceforth it should focus more on substantive analysis: getting workload analysis fully implemented, finding efficiencies, developing new program initiatives, and re-examining older programs carefully. We must also continue to help Office of Management and Budget develop cross-agency ZBB.

(2) We need both stronger State programs and stronger State/EPA collaboration. State and local officials now staff 85 percent of the national environmental regulatory effort, and we are seeking to delegate even more. We must strengthen our joint environmental management effort, especially in the following areas:

- We have more than doubled the Federal grant support to State and local units since 1977 (including the addition of the Clean Water Act, Section 205(g) funds).

- Our new State/EPA agreements should become more than contracts: they should induce joint planning and they should press decision making up to the senior policy officials on both sides. This should make it easier to refocus programs as our needs change and to innovate and integrate. By 1981 the agreements should cover all our programs.

- We must win passage for and then implement our Integrated Environmental Assistance legislation to give the States the flexibility and added resources for such refocusing, innovation, and integration.

- We should encourage personnel interchange and training, e.g., through group IPA's.

(3) Our Regional Administrators must strengthen their management/analytic capacity so that they can better manage their Regions, lead and evaluate the State and local agencies in

their areas more effectively, and participate equally in Agency-wide policy and management decision making. Unless the Regions' ability to think and manage is strong, both Regional decentralization and EPA's linkage with State and local government are at risk. Headquarters analytic units must help the Regions develop this capacity, and both sides should build strong, continuing ties.

(4) Our managers should adopt Agency-wide career paths. True independence, based ultimately on the real ability to move if frustrated, will flow from the professional breadth, self-confidence, and reputation such mobility will foster. It will also give the Agency a management team with Agency-wide environmental perspective and loyalty, a critical step in our successful integration.

(5) The Agency's grantees, programs, and managers should be held accountable for their performance. We do not do this core management task at all well now. Our new personnel performance evaluation and reward program -- probably our most demanding management reform for the next 12 to 18 months -- will make major difference. Our review of monitoring and the new Regional Profiles may help. OUr fundamental scrutiny and rationalization of our many computer-based information systems will help. A systematic regiment of evaluations beginning at the local and State levels and working up is critical. Such evaluations should be backed by a reformed reporting system and tied to the promises made in ZBB. Designing and implementing a practical, integrated, limited-cost way of holding the States' and our own decentralized managers accountable is a difficult, missing part of our management construction.

RESPONSIVE, EFFICIENT SERVICES

We will continue implementing a number of fundamental improvements in the Agency's services in 1980-81:

(1) We must begin to manage EPA's personnel. The new Civil Service Reform Act only makes this possible: we will have to make it happen by changing the way each of our managers does his or her most important job.

(2) We will begin pilot tests of contracting reform in 1979 to improve responsiveness and cut processing time.

(3) The Agency will commit to new computers after a thorough management review of our data needs and of our existing and planned programs.

A SMART AGENCY

Our analytic services -- directly supporting our top managers, helping prepare regulations, checking budget pricing, providing legal or economic analyses, negotiating with other agencies, and the like -- must keep up with a growing workload and maintain a superior level of professional quality. Compromise here is foolish.

We must continue our leadership in regulatory reform. Finding more effective, equitable, and economical ways of doing our work is one of the most useful, highly leveraged opportunities open to us. (Further, as America's largest regulatory agency, we have a responsibility to lead. Our two most important reforms are controlled trading and tools for regulatory decision making, including benefits analysis.

Once we set a standard for controlled trading of clean-up requirements, we can allow those we regulate to find more efficient ways of achieving the same (or better) environmental result. These alternatives must also be as administrable and enforceable as our initial approach. Offsets (in both non-attainment and PSD areas), the bubble, banking, brokerage, and perhaps marketable rights should gradually all fit together into an increasingly important complement to traditional "command and control" regulation. If we can make this approach work on a wide scale, we will provide our first positive incentive for control technology innovation and significantly reduce clean-up costs (and therefore resistance to clean-up).

To strengthen both performance and accountability we should strengthen our program evaluation capacity at all levels. We should also play a stronger leadership role in Administration debates on both economic and energy policies; the best defense is a more sensible alternative.

AIR RESEARCH GUIDANCE

AIR

MEDIA OVERVIEW

Planning Assumptions

New Source Review (NSR) -- In FY 80, most States will have EPA approved State Implementation Plans for Prevention of Significant Deterioration (PSD). During FY 80, Regional Offices will curtail their review of PSD permit applications with the principal Regional Office role in FY 81 being one of maintaining an overview of State and Local programs with little or no direct EPA permit issuance. EPA will make maximum utilization of contractor support in conducting required permit review activities in 1980 until State plans are approved and will utilize Section 105 grant funds to secure such assistance.

Headquarters and Regional Offices will provide specific expertise and interpretation of Agency policy and guidance (ex. modelling) to States in implementing the PSD program. In addition, the Regional overview function in FY 81 will give particular attention to assuring consistency between adjoining States. The Regional Offices with assistance from Headquarters will be involved in mediating/arbitrating issues relative to interstate impact on growth plans and use of the increment particularly in high growth areas.

The promulgation of regulations expanding PSD requirements to include carbon monoxide, nitrogen dioxide, and volatile organic compound emissions will be completed by Office of Air, Noise, and Radiation (OANR) by the end of FY 80. OANR will support the States efforts to insure consistent policy in the review of new source permits and control technology determinations by maintaining a clearinghouse for these decisions.

During FY 80/81, the number of New Source Performance Standard promulgations by OANR will be greatly increased. These new emission limits will provide a general basis for determining required case-by-case Best Available Control Technology (BACT) by either the State or Regional Office for sources subject to PSD.

In those States not delegated New Source Performance Standards (NSPS), National Emission Standard for Hazardous Air Pollutants (NESHAPS) or having an approved SIP for PSD, Regional Offices will continue to verify the compliance and initiate enforcement action against new sources including Federal facilities subject to NSR requirements which are in violation of procedural, permit, or emission requirements.

The Office of Air, Noise and Radiation and the Office of Enforcement in FY 80 will develop procedures for the overview and audit of State new source review activities including engineering determinations, modelling, public notification, surveillance, and enforcement to assure new source compliance with both procedural and emission requirements. This review will also include adequacy of procedures for tracking increment utilization, growth and impact on air quality including Reasonable Further Progress in attaining standards.

The consolidation of EPA new source permitting programs will continue in 1980. Inclusion of the air permits into the consolidated program where direct Regional Office permitting activities are still necessary will occur in FY 81.

Carbon Monoxide and Ozone (CO/O_3) -- During FY 80, the review and possible revision of the National Ambient Air Quality Standards (NAAQS) for CO will be completed. It is expected that if there is a revision to the CO standard, it will not signicantly change the number of major urban nonattainment areas where the development and implementation of transportation measures (including automobile inspection/maintenance (I/M)) by the States would be necessary to attain the standard by 1987.

In FY 80 followup actions to remedy deficiencies in the 1979 SIP submissions will be completed by most States and reviewed by Regional Offices. Also, the schedules contained in the 1979 SIP for developing mandatory I/M programs, conducting a transportation control planning process, and enacting additional volatile organic compound (VOC) regulations consistent with the Control Technology Guideline (CTG) documents will be met by most States in both FY 80/81. Regional Offices will track the progress of States in meeting these schedules with major guidance being

provided in the development of the transportation planning process in urban areas greater than 1,000,000 population, and the development of mandatory I/M programs. The appropriation by Congress of any additional Section 175 monies for support of the transportation planning process is not expected in FY 80 or 81.

Development of a regional ozone model will be completed by the Office of Research and Development (ORD) in FY 81 with support from OANR. The model will serve as a major tool in developing the appropriate strategies by States for inclusion in the 1982 SIP submission for those major urban nonattainment areas having an extension that are experiencing extensive air quality violations and which will require implementation of complex and costly control measures to attain by 1987. Use of the model will require in FY 1980 the development by the States of extensive data bases within these areas (i.e., emissions, air quality, meteorology). The establishment of National Air Monitoring Stations (NAMS) for ozone and the quality assurance of the data from these stations should be completed by the States to provide the ambient data necessary for model application.

Verification of compliance and initiation of necessary enforcement action by the States against existing stationary sources subject to the new VOC emission limits included in the 1979 SIP and the additional regulations required to be enacted by January 1980 will commence. Regional Offices will work with States to develop a strategy for these sources and oversee State efforts to verify and secure compliance. The Regions will initiate necessary enforcement action where States fail or cannot act or request EPA assistance. The 1979 SIP is expected to increase the number of major VOC sources subject to the SIP by 3,000 with an estimated 6,000-8,000 additional sources anticipated by the end of FY 81.

In FY 80, enforcement by EPA of anti-tampering and fuel switching requirements in areas requiring mandatory I/M programs will be initiated by Mobile Source Enforcement Division (MSED). These actions will assist in reducing the costs to the public of passing a mandatory vehicle inspection. States will be encouraged to enforce existing State anti-tampering or fuel switching regulations or to develop regulations if none exist.

In FY 80, both EPA Regional Offices and the States will establish more effective measures for informing the public and securing public participation in the strategy development and implementation process particularly as it relates to the transportation planning process and mandatory I/M programs.

Procedures will be established and implemented by OANR to insure consistent application of sanctions nationwide as required by Sections 176 and 316 of the Clean Air Act where States fail to enact or carry out necessary controls for the attainment of NAAQS.

The development and promulgation of additional mobile source emission standards required by the Clean Air Act will be completed by OANR in FY 80.

Total Suspended Particulates and Sulfur Oxides (TSP and SO_x) -- In FY 80, the required review of NAAQS for TSP and SO_2 will be completed by OANR with necessary revisions to be promulgated by EPA in FY 81. The review of the TSP standard may result in the promulgation of new primary ambient standard for inhalable particulates (IP) and subsequent secondary ambient standards for sulfates and fine particulates during FY 81. The modification and promulgation of additional TSP/SO_2 standards will require major State efforts to revise the SIP in FY 81 with completion required in FY 82. In FY 80, efforts to refine the definition of the nature and extent of the TSP problem in urban nonattainment areas where re-entrained fugitive dust is a major element will be conducted by both ORD and the States in anticipation of the new standards.

By the beginning of FY 80, all State or EPA-initiated civil/criminal actions associated with the Major Source Enforcement Effort (predominantly TPS and SO_2 sources) will have been undertaken with decisions either by settlement, administrative process, or trial completed by the end of FY 80 and disposition of appeals completed as early as possible in FY 81. The compliance of Federal facilities with existing SIP requirements will also be completed by EPA or the States by the end of FY 80. States in FY 80 will assume a larger role in securing and maintaining the compliance of Federal facilities.

Delegation to the States of the non-compliance penalty program (Section 120) initiated by EPA in FY 79 will be undertaken in FY 80 and accelerated in FY 81. It is estimated that the program will be delegated to 15 percent of the States in FY 80 and to 30 percent in FY 81.

In those cases where the States have not accepted delegation for the non-compliance penalty program by FY 81, Section 105 grant funds will be utilized by EPA for implementing the program. These funds will provide contractor assistance for implementing the program to minimize impact on available EPA resources in assessing penalties.

In FY 80/81 new programs devoted to ensuring that major TSP/SO_2 sources that have obtained or are presently in compliance remain in compliance will be initiated both by EPA and the States. OE will complete development of an improved program in FY 80 in consultation with the States and then secure State plans for implementing the improved program with the States focusing first on a limited number of selected troublesome sources.

Toxics -- During FY 1980/81 emphasis on control of hazardous pollutants will increase as result of the Air Carcinogen Policy. Promulgation of NESHAP standards will be accelerated. NESHAPS for benzene and arsenic are currently planned for FY 1980/81.

Goals/Priorities/Objectives

The goal of the program is to protect public health and welfare through a combination of national efforts which provide for consistent and timely progress in rectifying existing air pollution problems and avoiding new ones.

With respect to priorities, States were required to submit revised Implementation Plans in January 1979 outlining their strategies for attaining ambient air quality standards in designated nonattainment areas. High priority will be given to correcting deficiencies in these SIPS and to providing adequate guidance to States in developing and implementing additional programs required for the attainment of standards. High priority will also be given to review of ambient air quality standards and development of supporting analyses for revisions to the standards.

Emphasis will be given to a program obtaining State acceptance of full responsibility of all New Source Review activities, providing adequate guidance for development of PSD SIPs and maintaining an effective national clearinghouse for NSR decisions. The clearinghouse will be used by both Regions/States to assure consistent policy in conducting NSR.

The NSPS program will receive increased funding in FY 80, thereby allowing work to begin on all NSPS on schedules consistent with the statutory deadline. When an Air Carcinogen Policy has been established, development of NESHAPS consistent with that policy will become a priority item.

In FY 80 priority will be given to establishment of technically sound NAMS/SLAMS and implementation of quality assurance measures to establish increased credibility to air data.

Development of regulations for PSD Set II and visibility will receive priority in FY 80.

The highest priority in the mobile source program is the support of I/M implementation by States and the development of requisite technical information on evolving aspects of I/M programs, such as its applicability to newer technology control systems. Also of importance will be the completion of the standard-setting activities mandated by the Clean Air Act, and the implementation of controls necessary to assure public health protection.

During FY 1980, many standard-setting activities will result in final rulemaking. It is expected that during FY 1981 the standard-setting program will shift its priority focus to the control of hazardous pollutants, bioactive materials, and emissions under non-FTP conditions.

Enforcement priorities include:

- Enforcement actions in emergency situations involving substantial threats to public health and safety.

- Major Source Enforcement Effort against violators of the Clean Air Act.

- Enforcement against automibile/truck pollution.
  - anti-tampering
  - fuel switching
  - inspection and maintenance program
- Fuel compliance by Federal Facilities.
- Review for enforceability in FY 1980/81 with respect to any continuing SIP revision work
- Section 120 noncompliance penalities
- Major source compliance with SIP revisions, and enforcement of NSPS and NESHAPS
- Improved program of compliance monitoring and enforcement to assure continuous compliance

Regional priorities are set forth in the Regional Guidance section.

The objectives of the Air Program Regional Activities in 1980 and 1981 are to:

- Assure attainment of standards in accord with the approved SIP schedules
- Assure consistent application of the law in all States
- Increase the State responsibilities in new source review
- Initiate enforcement actions in all appropriate emergency situations
- Complete all civil/criminal action associated with the Major Source Enforcement Effort
- Implement effective inspection and maintenance, anti-tampering, and fuel switching program
- Initiate civil/criminal actions and impose noncompliance penalties against all appropriate major sources in violation of SIP standards, NSPS, and NESHAPS
- Perform annual evaluations/audits of State enforcement programs

- Improve and have at least quarterly updates of CDS
- Assure full compliance by Federal Facilities
- Followup on all enforcement actions and compliance schedules

Research and Development

In FY 81 and FY 81 the research and development program will continue to carry out its extensive activities in support of the full range of short- and longer-term needs of the Office of Air, Noise and Radiation Programs. The program will include, however, some major shifts in emphases in response to the changing nature of the air pollution problems. The FY 80 program has already passed through ZBB process; its general contours have been established. Therefore, we do not anticipate any major shifts to occur as a result of detailed plan implementation in coordination with the relevant research planning committees. Shifts that do occur are expected to be at a level of resolution that will not affect the FY 80 program.

In FY 81, we do anticipate some major shifts in program emphases that will lead to redirection of resources. These emphases reflect certain assumptions about national and program office concerns with respect to the most pressing research needs. In some cases, the emphases flow directly from a research plan, e.g., work on inhalable particulates, in others, they reflect ORD's attempt to get the jump on what we anticipate to be program office needs within the next five years.

This guidance is not exhaustive. It merely identifies the peaks on what is the much more elaborate and extensive topography of the complete research program.

The exact composition of the entire research program will be hammered out in detail in the deliberations of the appropriate research committees. The guidance provides only the benchmarks for that detailed planning activity. Effective with the FY 80/81 planning cycle, the major part of the Office of Research and Development (ORD) planning and management system is organized around 12 research committees. These research committees provide the means for ORD to work jointly with representatives of the program offices in preparing research plans.

All of the research in support of air program regulations in FY 80/81 is covered by the planning activities of four committees:

1. Oxidants (includes ozone, NO_x and hydrocarbon research)

2. Gaseous and Inhalable Particles (includes SO_x, nitrates, suspended particles, and lead)

3. Mobile Source Air Pollution

4. Hazardous Air Pollutants (includes organic emissions as toxics, metals, such as Hg, As, Cd, and asbestos)

For purposes of clarity and consistency, this research guidance has been organized along the lines of the research committee structure. Such a division can never be totally clean. For example, field studies on NO_x and nitrates provide outputs that are valuable in addressing both the oxidant and the inhalable particles problem. Similarly, research on the characterization and control of fugitive emissions can address questions concerning both the suspended particle and the hazardous air pollutant problem. The guidance does not attempt to deal with this ambiguity. Rather each major effort is assigned to a particular research committee domain based upon that aspect of the study which appears most critical from a programmatic perspective.

Oxidants (Ozone, NO_x, and Hydrocarbons)

In FY 81, the health effects program will continue to focus on ozone. Studies will be undertaken to determine conclusively the effects of low level

exposures on the cardiorespiratory efficiency of health exercising individuals. Also, an attempt will be made to isolate the effects of low level exposures to ozone on individuals suffering from chronic lung disease, viz., asthma and bronchitis. The effects of low level exposures on defense mechanisms to bacterial and viral infection will also be studied.

The program will also focus upon the potential health effects from exposures to secondary photochemical products such as formaldehydes, formic acid and acrolein. The ecological effects program will carry out studies to determine the acute and chronic effects of exposures to ozone on important and signal plant species. Assessment of impacts will include the effects on productivity, quality, and basic processes for forest and crop species and on integrated ecosystems. Some work will continue to assess the biogenic emissions from vegetation and their contribution to ambient ozone and oxidant levels.

In the transport area, the FY 81 program includes a commitment to continue ORD's program of targeted field studies. In addition the program includes continuation for a major effort begun in FY 80 to assess the impact of regional scale oxidants in the Northeast. Laboratory studies will complement the field studies in order to provide a more comprehensive understanding of the atmospheric reactions that occur among ozone precursors (volatile organic compounds and oxides of nitrogen).

The characterization program in FY 81 will continue field and laboratory measurements to determine the formation and distribution of secondary photochemical products associated with mobile and stationary sources.

In the control technology area, the effort wil continue to demonstrate NO_x control technology to include industrial processes employing fuel combustion, advanced control technology for stationary internal combustion engines and gas turbines, and new technologies for power plants.

Finally, the modelling area work will continue to provide improvements with particular emphasis on developing validated, multiday air quality simulation techniques for ozone and oxidants.

Gaseous and Inhalable Particles (includes SO_x, Nitrates suspended particles and lead

Inhalable particulates will continue to demand major attention in the FY 81 health effects research program. Animal toxicology studies will examine potential chronic effects of exposure to coarse and fine particles. Clinical studies will examine the acute effects of exposure to combinations of particulate pollutants. In addition, studies will continue on the acute effects of exposures to NO_2, on healthy and sensitive populations, and the short- and long-term effects of exposures to nitric acid vapor and nitrates, including the possibility of in vivo nitrosamine formation. Finally, the health effects program will contain a significant effort in the area of particle epidemiology studies.

As part of the mandatory 5-year review and updating of criteria documents, in the area of secondary air quality standards, research will continue to improve our ability to assess the impact of gaseous and particle pollutants in the terrestrial environment. Long-term, low-level chronic exposures of gaseous pollutants acting singly and in combination need to be further studied.

In anticipation of a possible change in the TSP standard that may include separate consideration of inhalable and fine particulates, the FY 81 program will include considerable effort in the areas of characterization and methods development, modelling, and control technology for inhalable particles. The program includes an extensive emissions characterization/emission factor program to provide a national assessment of sources, concentrations, distributions, and components of particulate matter. Control technologies will be evaluated with an emphasis upon their removal efficiencies for inhalable size fractions and selected chemical components.

Paralleling the characterization effort will be a continuing program to develop particulate emission measurement equipment and materials. This research will address problems of continuous measurement, size distribution, and identification of individual compounds in particle emissions. Studies will also try to establish signatures for emissions from different sources in order to attribute ambient air particulate concentrations to specific sources.

Transportation studies will include a continuing major effort to provide validated multiday air quality simulation models for sulfates, nitrates and other inhalable particles. The modelling research will attempt to provide a means for assessing the long-range impact of particle emissions on primary standards and visibility under the assumption that a secondary standard for visibility may be necessary. During FY 81, data analysis and modelling activities in State will be emphasized using the FY 80 experimental results from the PEPE field intensive study. These results will substantially support the development of a visibility standard and of air quality transport models.

Field studies of visibility will continue to better identify the particle species and their source that contribute most significantly to visibility reduction. Methods development will continue to improve the existing instruments and techniques for quantifying visibility and related parameters. The FY 81 modelling program will also include a significant continuing effort to evaluate, validate and apply an acceptable complex terrain emissions assessment system.

The FY 81 program contains a significant effort to deal with the problem of acid rain. The emphasis of the program will be on the solution of those aspects of the problem are most critical and most amenable to solution. Most of the acid rain research will be funded under the Anticipatory Research Program (planned by the interdisciplinary Media), but some ancillary applied research will be funded by base research under the Air Media. Quality assurance in FY 80 will continue to conduct and coordinate on-site inspections and performance audits for the National Air Monitoring Stations with some increased support to EPA Regional reviews of State and Local Air Monitoring Stations.

Exposures assessment methods will also continue to demand a significant share of the monitoring and measurement techniques resources for inhalable particulates as well as all other air pollutants. Particular emphasis will be given to tying together epidemiological methods, stationary site monitoring systems, and personal monitors into compatible systems in terms of time, space and concentrations. As part of this effort, the FY 80 program will include the final stage of deployment of the inhalable particle sampler network.

Control technology research will continue to evaluate the relative efficiencies and costs of alternative means to control different size fractions of primary emissions. Control of fugitive emissions will also be investigated for priority industrial processes as well as for problems of resuspended particles from streets and other nonpoint sources. Associated with the technology studies will be the development of methods for and the actual acquisition of emissions data from non-traditional particulate matter sources needed for evaluating the long-term and short-term impacts of fugitive emissions of particles.

Mobile Source Air Pollution

The FY 81 program will continue to focus heavily upon the effort to define better the risks from diesel emissions by means of bench and field studies. In the characterization area, there will continue to be a substantial demand for the collection of exhaust products with different operating conditions, different engine designs, and fuel types. In addition, there is likely to be some characterization and measurement of exhaust products from candidate control systems.

Hazardous Air Pollutants (includes organic emissions as toxics, metals such as Hg, As, Cd, and asbestos)

The FY 81 health program will also include a signicantly expanded emphasis on air pollutant induced carcinogenesis. The primary emphasis will be on testing methods and epidemiological investigations. The test method development will address the design of an optimal tiered battery of tests for assessing potential for carcinogenesis. The epidemiological program will try to relate the incidence of cancer observed on cancer registeries to exposure to air pollutants. In the area of prospective epidemiology research will focus on the development of methods to track health status of populations subject to extraordinary exposure incidents.

In addition, we expect the research on air pollutant health effects begun under the Public Health Initiative to continue in FY 81. Some of the major problems that will continue to be addressed include: the improvement of methods to relate animal toxicity to human clinical

results; the development of faster, sensitive methods to detect biochemical, genetic and immune changes; and and epidemiological studies of selected pollutant problems, e.g., indoor pollution, improvement of our quantification ability with respect to exposure characterization, and temporal exposure patterns.

The FY 81 research program will also emphasize the characterization of hazardous organic emissions from stationary sources--both constrained emissions from vents and stacks and fugitive emissions. In both instances, the characterization may require the development of either sampling and collection methods or improved analytical techniques, e.g., for total organic emissions or for selected toxic substances.

Characterization activities in FY 81 will be expanded to begin a systemmatic effort to determine the inventory and significance of regulated air pollutants from stationary sources. In addition, the program will focus upon the characterization of indoor air and attempt to relate indoor air quality to 24-hour and annual exposures to various air pollutants.

Studies will be carried out to assess population exposures to toxic organic vapors and particulates, especially potential carcinogens and mutagens developing and employing where appropriate personal monitors.

The FY 81 program will include an attempt to identify and quantify hazardous materials associated with fugitive dust from mining activities, transportation of materials and industrial operations. Research will also be carried out to characterize VOC emissions and develop appropriate control technology. The development of solvent collection and disposal/recovery systems will also be pursued as well as the development of alternative solvents or solvent-free processes.

The control technology program will also include an expansion of the demonstration control options for the second round NSPS stationary sources and the effort to generate AP 42 emission factors and cost curves for selected control technologies and pollutants.

A final area of emphasis will be development and deployment of monitoring systems to allow broad scan screening of emissions and ambient air for a variety

of toxic organics. In addition, the program allows for some contingency to cover short-term delivery of targeted measurement devices to deal with particular problems, e.g., those efforts in the past to measure vinyl chloride around PVC plants.

Technical Support

The FY 81 program anticipates a significant amount of resources will be devoted to technical support to the program offices. In the past, this support has been provided, and we assume will continue to be provided, by the ORD base program. There is no rational way to assign specific levels of effort to each of the four major research areas a priori. The level and distribution of this technical support activity will be set as a result of the deliberations of the respective research committees.

Quality Assurance

Following on the major effort of FY 80, Quality Assurance will continue to be a major concern in the FY 81 research program. In addition to maintaining oversight over the Agency's quality assurance system, the research program will continue to investigate ways to improve the Agency's Quality Assurance activities.

Exploratory Research

The new structure for planning research in the Agency provides assurance that studies will be carried out in the support of the regulatory programs. However, the long-term viability of the Agency's assessment and control of environmental problems as well as the quality of ORD's programs depend upon a stable base level of exploratory research. The exact nature and amount of such research that is necessary will vary from program to program within any medium and even accross media. The FY 81 program for air research assumes that 15% of the total budget will be devoted to exploratory research, i.e., research which is not in direct support of some existing or anticipated regulatory need. This 15% figure appears low but given the pressing need for research in support of regulation, such minimum level may be necessary. In any event, this guidance establishes this minimum level of 15% as a base on which the research committees can base their deliberations.

Energy

The Energy Research Program is ranked by the Energy media team. Nevertheless, a great deal of the energy research addresses air pollution problems. Every attempt will be made to factor the Energy activities into the deliberations of the Air media group. To aid in those deliberations, the following major emphasis of the FY 81 Energy program are provide for reference:

- Field experiments on the formation and transport of nitrates and secondary organic particles will continue in FY 81. An effort will be initiated in FY 81 to expand the geographical areas of concern for baseline measurements of nitrates and organic particles beyond the Ohio Valley Region.

- Continuation of the demonstration of low NO_x burner technology for new and existing industrial and utilty oil and coal-fired boilers.

- Continuation of the characterization of particulates (including the condensible fraction) for energy facility emissions.

- Development and demonstration of dry low cost SO_x control technology for new and exixting industrial and utility boilers.

- Continuation of the air quality monitoring network in the East in order to establish a baseline from which to assess the impact of energy activities.

- Finally, consultations and discussions during FY 80 between EPA and National Laboratory Scientists in DOE should lead to integration of the MAP3S program into the overall EPA-ORD research program.

WATER QUALITY RESEARCH GUIDANCE

WATER QUALITY

MEDIA OVERVIEW

Major Objectives

During 1980/81 the Water Quality Program will aggressively pursue the following three central objectives which are encompassed in this Guidance:

- To aggressively control pollution discharges in order to protect public health and sensitive ecological systems such as wetlands;
- To share responsibilities with States and localities while encouraging public participation in water quality management; and
- To manage the program in an efficient manner.

Clearly, the driving force in the Water Quality Program is to control pollution, to protect public heatlh and the environment. As our knowledge has increased regarding the effects of toxic pollutants on human life, so too have we intensified our efforts on controlling toxic pollutants from entering the environment. Similarly, the significant improvements in our understanding of aquatic resources, especially wetlands and shallow water areas, is paralleled by increased legislative attention to protect these resources through Section 404 of the Clean Water Act. It is essential that responsibilities are shared between Federal and non-federal authorities to maximize our efforts on improving water quality, to limit redundancies in Federal and non-federal programs, and to utilize the best mix of resources to identify and solve our environmental problems. Because of the critical nature of the Water Quality Program and the large number of dollars the program utilizes, it is essential that the program be managed efficiently to maximize environmental benefits. This can be achieved through an integrated planning and implementation process within the Agency as well as integration with other Federal agencies and States and localities.

Major Planning Assumptions

Inherent in the priority activities for FY 80/81 for achieving media objectives are the following major planning assumptions:

Construction Grants

- The Construction Grants appropriation will be $3.8 billion in FY 1980 (available by October 1, 1979), and $4 billion is requested in FY 1981, with the allotment formula for both years the same as in FY 1979.

- The Congress will enact a one-year extension of the allotment period for FY 1979-1982 Construction Grants funds, increasing the period of availability to three years for all appropriations authorized in the Clean Water Act.

Spill Prevention

The Spill Prevention and Response Program, while continuing in the general program direction established during the last two years, is experiencing some major changes in emphasis to allow response to hazardous spills. The principal assumptions for program planning in FY 1980 are:

- Publication of final Hazardous Substances Regulations, revised to incorporate the October 1978 amendments to Section 311 of the Clean Water Act, is expected in the Spring of 1979.

- The list of 299 hazardous substances which must be reported in the event of a spill and which will require EPA spill emergency response will be expanded by 1981.

- Based on voluntary reports, the program estimates about 700-1,200 hazardous spills, involving one or more of the 299 substances, will occur annually.

Ocean Disposal

- All interim Ocean Disposal Permits are to be phased out by the end of 1981, by regulation. All dumping of harmful sewage sludge is to stop by the end of 1981, by statute.

Dredge and Fill

- Transfer of Section 404 Dredge and Fill Program responsibility to qualified States will begin in FY 80 and increase in FY 81. Approvals will remain low until later years (reflecting both a waiting

period while EPA finalizes regulations and the lead time for States to develop their programs), but EPA will be heavily involved in assisting interested States in program development.

- The total Dredge and Fill permit load will increase gradually from the current level as EPA enforcement activities increase. This change results from better surveillance methods and more citizen participation and increasing attention to the total acreage and stream mileage being actually regulated.

Water Quality Management

- Funding of continuing planning will be limited to those areas in which substantial implementation of the initial approved plan is taking place.

- Funds will be available for continuing planning under Section 208 in FY 81 with emphasis on completion of planning in high priority problem areas.

Permits Issuance

The FY 80/81 Guidance is premised on three major assumptions:

- FY 80/81 priorities will be essentially the same as in FY 79, that is emphasis is placed on issuing and reissuing permits to control major sources of industrial and municipal pollution, including Federal facilities.

- Additional priorities which must be addressed within the context of decreasing resources are implementation of the permits consolidation effort and implementation of the National Pretreatment Program.

- Clean Water Act amendments require consideration of new variances such as the Section 301(i) municipal time extension, the Section 301(g) water quality variance, and the Section 301(h) marine waiver.

Media Priorities

Program plans in FY 80/81 will emphasize activities that are designed to better assess environmental problems, and to develop and implement programs to solve and prevent environmental hazards.

Essential to an efficient pollution control program is the ability:

- To identify potentially harmful pollutants;
- To assess the effects of levels of pollutants on aquatic organisms, other food chain organisms, and man;
- To assess the transport and fate of pollutants in the environment;
- To monitor for potential pollution problems; and
- To evaluate improvements in water quality.

Much is known about conventional pollutant indicators such as biological oxygen demand and bacterial counts. However, our ability to assess toxic pollution problems is hampered by the large number of toxic pollutants in the environment and the necessity of using highly sophisticated and expensive technology to monitor pollutant levels. Currently there is much ongoing work to resolve these problems.

Program plans demonstrate an integrated effort by the Office of Research and Development and the Office of Water and Waste Management to improve problem assessment capabilities.

Concurrent with our activities designed to identify and assess environmental problems, the Water Quality Program is aggressively pursuing activities to solve our water quality problems while limiting environmental impacts to other media. Major Water Quality Program thrusts for 1980/81 are in response to the mandate of the Clean Water Act of 1977.

Program plans represent a coordinated effort by the Office of Water Program Operations, Office of Water Planning and Standards and Office of Enforcement, working in concert with States and localities to:

- Control industrial and municipal dischargers of pollutants through technology-based controls.
- Control nonpoint source pollution and prevent and clean up oil and hazardous spills.
- Protect sensitive ecological systems such as lakes and wetlands.

- Utilize Water Quality Standards and environmental quality based effluent controls, where necessary, to assure protection of public health and environment.

- Enforce environmental control requirements.

The implementation of these priorities will be characterized by their integration within the Water Quality Program and integration with other Agency activities directed at improving environmental quality. Information gleaned from problem assessment activities will be critical to the continuing evolution of solutions and strategies.

Industrial and Municipal Dischargers

In 1980 and 1981 the control of industrial and municipal dischargers of pollutants will remain the keystone to water programs control activities. The 1980 program will also include additional pollutant studies (e.g., "hot spots" analyses) that will concentrate on selected areas of industry where monitoring data indicate high cancer incidence or potential water pollution problems would persist after the implementation of effluent limitations. The studies will lead to the development and implementation of additional controls. Efforts also will continue in 1980 to identify other toxic pollutants and industries that should be addressed in effluent guidelines.

By 1984, industrial sources of toxic pollutants will be required to meet technology-based toxic effluent discharge limitations for both direct and indirect wastewater discharges. This effort entails detailing the presence or absence of 65 toxic pollutants or classes of toxic pollutants. An in-depth economic analysis of each industry also must be conducted to ensure that regulations are economically achievable and equitable. This program will peak in 1979 and 1980 and continue through 1981 with final promulgations and court defenses.

Municipal point source control activities are addressed principally through the Waste Treatment Facility Construction Program. This program is of major importance to reduce water pollution problems resulting from conventional pollutants, such as suspended solids, bacteria, and oxygen demanding loads that degrade our waters and continue to pose problems to public health and the environment. The long range goal of the Construction Grants Program is to eliminate

the municipal discharge of untreated or inadequately treated pollutants and thereby help restore or maintain the quality of the Nation's waters. A large number of amendments to Title II of the Clean Water Act created incentives for use of environmentally justifiable, innovative and alternative technologies in municipal treatment systems; established funding for States to assist them in adopting and managing Construction Grants Programs; made special considerations for the needs of small communities; and increased emphasis on water reuse and recycling, recovery of energy, and confined disposal of pollutant wastes to prevent their migration to the water.

Through the passage of the Clean Water Act the Congress reaffirmed its intention that States have a major and continuing role in environmental programs. The year 1980 will mark the start of a new era in planning, implementing and managing environmental programs at the Regional and State levels. State/EPA Agreements will present consolidated approaches to solving water supply, solid waste, and water pollution control problems. The integration of these program areas will be a major step toward the objective of comprehensive environmental planning and management.

Activities aimed at integrated management are being initiated in 1979. EPA is requiring all States to develop comprehensive State/EPA Agreements to cover Clean Water Act programs including consolidation of Sections 106, 208, 303, and the Clean Lakes provisions of Section 314.

State/EPA Agreements will be the result of a negotiation process between each State and its respective EPA Region. The Agreements will describe activities that States and EPA will undertake during the coming year. An agreement will be the result of an assessment of the environmental problems faced by an individual State, development of a long-term strategy to solve those problems, and a determination of critical steps to take during the next year.

Each State/EPA Agreement will reflect important decisions on environmental and programmatic problems, State and EPA priorities, timing, and responsibilities. It also will be a management tool which focuses attention on the evaluation and accomplishment of major environmental efforts.

Initial Water Quality Management Planning will be completed by all States and areawide agencies by the end of 1979. The continuing planning effort by local and State agencies in 1980 will focus on the highest priority problem areas with special emphasis on toxics. The Agency will stress implementation of the initial plans and require that substantial implementation occur as a condition for future funding.

The key change in program management to ensure Section 208 plans are being carried out is the development of the State/EPA Agreement process. State implementation will utilize funds provided under Section 106 Program Grants to accelerate establishment of regulatory programs and to provide for monitoring to assess the adequacy of clean-up efforts.

Implementation of the Construction Grants Program requires integrated Agency and State efforts with a large delegation of responsibilities to the States.

The program strategy for 1980 recognizes that there are limited funds available to meet these pollution control needs and that the funds available must go toward assisting municipalities in meeting the most critical needs in the shortest possible time. Accordingly, the EPA strategy for 1980-1981 is: (a) to orient funding toward meeting the environmental requirements of the Act through stringent cost-effect review on a project-by-project basis, and (b) to stress innovative and alternative approaches to waste treatment, including emphasis on water and energy conservation, waste water reuse and recycling of pollutants, and small systems. Funds specifically earmarked for State delegation under Section 205(g) of the Act will be directed toward maximizing State assumption of program activities in the shortest possible time. In all cases, State delegation will be part of an overall agreement that will ensure that EPA policies and environmental objectives continue to be met.

EPA will continue to pursue program strategies that provide sufficient certainty and stability to States and municipalities to facilitate effective planning and management at all levels. The 1980 appropriation request of $3.8 billion is a critical component of this management need.

The State Management Assistance Grant Program authorizes the use of two percent or $400,000, whichever is greater, of each allotment to cover the cost of delegation to the States of the Construction Grants Program and (to the extent that funds suffice) the National Pollution Discharge Elimination System Permit, Dredge and Fill, and Section 208 Management Programs. EPA's long-term goal is to allow the States, rather than EPA, to assume responsibility for day-to-day management of Construction Grants activities. The timing and extent of delegation to each State depends on the State's ability to operate a program that meets the necessary competency requirements and policy direction mandated by the law and EPA objectives. A grant is given to a State when it can show that it is able to assume delegated responsibility for a substantial portion of Construction Grants program activities.

Approximately 26 States are expected to receive State Management Assistance Grants during 1979, which will allow gradual phase-in of most program activities as the States staff up and are trained to accept each task. Most of the remaining interested States will have entered into preliminary negotiations during 1979 leading to a grant in 1980 and 1981. Resource benefits from this State delegation strategy should begin to be evident in 1981.

Control of Nonpoint Sources

Nonpoint source pollutants are a continuing cause of water quality degradation. A substantial number of the nation's waterways will continue to fail to meet their intended uses unless nonpoint source programs are developed and controls enacted. Nonpoint source problems require further identification; control techniques must be developed and tested; and cost effective, best management practice systems designed and demonstrated. Substantial efforts will be directed to the identification and evaluation of these practices both with Agency resources and in conjunction with other Federal agencies.

It is a priority to continue to develop and assess methods of controlling urban nonpoint source pollution and additional methods for controlling rural nonpoint source pollution.

Hazardous Spills

In 1980, the Agency will implement and expand its Spill Prevention and Response Program to cover not only oil spills but also the discharge of those substances determined to be hazardous by EPA. The Agency is currently developing and will promulgate regulations for hazardous substances designations, removability, harmful quantities, and rates of penalty. An Environmental Emergency Response Team has been established to provide immediate on-the-scene expertise in handling, clean up, and disposal of most critical oil and hazardous substance spills.

Protection of Ecological Systems

Wetlands

In FY 80 and especially FY 81 the Wetlands Protection Program will have a high priority within the Office of Water and Waste Management. Section 404 of the Clean Water Act provides the principal protective tool and may underpin other non-Federal activities for protection of wetlands. EPA shares the responsibility for implementing Section 404 with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and in the future, with the States.

A significant increase in Section 404 responsibility for EPA will occur in 1980 as the Agency provides a significant degree of the substantive review on at least the most significant environmental permits, whether issued by the Corps or the States, and responds to the variety of new program developments.

Under the 1977 Act, the Corps will continue to allow dredge and fill material discharge in the traditionally navigable waters. States may assume permit responsibility in other waters, if they are qualified. EPA's role in this process is large and includes responsibility for issuing regulations, establishing State program approval criteria, reviewing and acting upon applications from States, and providing continuing oversight for both States and the Corps permit programs.

EPA is currently drafting two sets of regulations for State assumption of permitting responsibilities. The regulations are for program approval and State program operations.

Lake Protection

The Clean Lakes Program is authorized by [illegible] of the Clean Water Act. The program [illegible] to States for: identification and classification according to euthrophic condition of all properties around freshwater lakes; procedures, processes, and methods to control sources of pollution; and procedures for restoration.

Program plans demonstrate continual efforts directed at efficient control of lake pollution problems and activities designed for lake quality enhancement.

Water Quality Standards and Environmental Quality Based Effluent Controls

Water quality standards are a means for States to protect the ambient quality of their waters. Section [illegible] of the Clean Water Act requires States to review Water Quality Standards every three years and to submit new and revised standards to the Administrator for approval. If standards are unacceptable to the Administrator, the EPA can promulgate State standards where States fail to comply with Federal regulation.

At present, many State standards do not contain criteria for toxic substances. Even where States do have certain criteria for toxics, NPDES permits frequently are not written to meet such criteria. In FY 80/81 EPA is considering revising the Federal standards regulations so that States may be required to adopt numerical criteria for a minimum list of toxic substances. The Office of Water Planning and Standards is further attempting to remedy this through technical assistance on wasteload allocation procedures and methods of implementing bioassay criteria in Water Quality Standards. An additional priority here is to develop a strategy for the use of Section 307(a) toxic effluent limits where BAT requirements are sufficient to protect public health and environment.

Enforcement

Enforcement activities play a central role in implementing an effective pollution control program. Toxic pollutant and hazardous materials enforcement wll be pursued through enforcing reissued permits, bioassay inspections, pretreatment requirements, Section 404 requirements, Section 311

hazardous substances requirements, and use of Section 504 emergency powers. In 1979 [illegible] Program will initiate its issuance of permits based on promulgated effluent guidelines for toxic pollutants.

Implementation of the pretreatment requirements demonstrates the importance of working liaison between the EPA and localities. The Clean Water Act of 1979 requires that POTW's must develop programs to enforce the EPA's National Pretreatment Requirements. Following the 1978 promulgation of Federal pretreatment guidelines the program will begin to shift in 1979 and 1980 to the local level. Toxic pollutant controls will proceed through incorporating pretreatment requirements in municipal permits for control of indirect discharges. Enforcement resources will be devoted to the pretreatment programs, consider requests for modification of pretreatment standards, and modify municipal permits to incorporate pretreatment requirements.

The Water Quality Program will make a major initiative to limit the redundancies of the regulatory process and to provide for more efficient program management. In 1980 the Permit Program will work to consolidate National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act with Hazardous Waste permits under the Resource Conservation and Recovery Act, and Underground Injection Control permits under the Safe Drinking Water Act. Consolidation of these permit programs will eliminate duplicative permit issuance reporting requirements for affected facilities.

Emphasis will continue in 1979 and 1980 on the Municipal Enforcement Strategy first formulated in 1978. As with other water quality programs, this strategy is an attempt to integrate program activities of the Grants, Enforcement, and NPDES Permit Compliance Programs, to better coordinate and reinforce planning and scheduling of municipalities to meet the goals of the Act. The principal effort in 1979 and 1980 will be to implement a program of action throughout EPA and the States, leading to:

- Integrated municipal permit and grants schedules;
- Compatible information systems;
- Internally consistent operating procedures; and
- Coordinated grant and enforcement sanctions for noncomplying municipalities.

The overall result is expected to be more effective and expeditious actions toward the compliance of municipalities with requirements established in the Act.

Permits Issuance

The major objectives of the FY 1980/81 Permits Program will be to maximize the control of toxic pollutants through the initiation of the second round permitting effort and the implementation of the National Pretreatment Program; to accomplish a major regulatory and management reform initiative by streamlining the permit process to allow for consolidated procedures, organization and permit format; and contribution to the major source enforcement effort through implementation of the National Enforcement Strategy.

Under separate cover, OWE will provide more detailed guidance on integrating permit program priorities with particular reference to pretreatment activities.

- Toxic control through second-round permits -- NPDES second-round permits under the Clean Water Act will begin to be issued in FY 80 and will be issued throughout FY 80/81. The reissuance of expiring permits to these industries, including Federal facilities, covered by the NRDC consent decree ("primary" industries) will be of particular importance as it will impose BAT/toxic limitations on the significant sources of toxic pollutants. Emphasis on permits issuance will be prioritized in FY 1980/81 as follows: major primary industries which could be sources of highly toxic substances, major secondary industries, remaining (80%) minor primary industries, and minor secondary industries.

- Regulatory and management reform through consolidated permitting -- EPA is consolidating its permit programs, both to simplify administrative steps and to facilitate addressing all environmental concerns through a single process. By October 1, 1979, EPA will consolidate permit issuing, i.e., permit drafting, paper flow and initial point of contact, for NPDES permits; Hazardous Wastes permits; Underground Injection Control permits; Ocean Dumping permits; Air New Source permits; and other permit-like programs in one place in each of its Regional Offices. Regulated facilities will be able to submit one application for all water, solid and hazardous wastes related permits; go through one review; and be issued one permit.

- Toxic control through pretreatment -- The pretreatment program is expected to take on increasing importance in 1980. Pretreatment activities in FY 1980 should be addressed generally according to the following priorities: 1) provide assistance to States in developing State pretreatment programs and approve such programs; 2) review and make determinations on requests for local pretreatment program approval; 3) develop compliance schedules for insertion in NPDES municipal permits requiring the development of a local pretreatment program; and 4) work with States and municipalities in identifying industrial users subject to categorical pretreatment standards as such standards are promulgated.

- Major source enforcement through implementation of the Municipal Strategy -- The National Municipal Policy and Strategy published in FY 1979 sets forth priorities for reissuing expiring major municipal permits. This policy directs that municipalities requesting time extensions for compliance with secondary treatment requirements (Section 301(i) extensions) be given priority in permit reissuance.

  The 301(i) compliance extension is a major mechanism for bringing non-complying municipalities into compliance with the law thus contributing significantly to the Agency's major source enforcement effort.

Research and Development

Much is known about conventional pollutant indicators such as biological oxygen demand, and bacterial counts. However, our ability to assess toxic pollution problems is hampered by the large number of toxic pollutants in the environment, and the necessity of using highly sophisticated and expensive technology to monitor pollutant levels. Currently there is much work ongoing to resolve these problems. Priority activities (not necessarily in priority order) in 1980/81 include an integrated effort by the Office of Research and Development and the Office of Water and Waste Management to:

- complete the publication of water quality criteria for 65 classes of toxic pollutants, to assess impacts of those pollutants on aquatic species and human health, and to determine acceptable levels,

- select additional priority pollutants and develop criteria,
- develop wet weather criteria for pollutants to account for nonpoint source contributions during high flows,
- add carcinogens and chronically toxic pollutants to the hazardous substance list,
- develop recreational water quality criteria,
- expand selected water quality predictive models to include toxics and sediments in assessing transport and fate of pollutants,
- develop rapid screening tests for characterization of toxic pollutants in complex effluent,
- assess effects of specific pollutants, pollutant transformation products and combinations of pollutants on marine biota,
- develop simulation techniques, including microcosms, to predict pollutant stress on marine biota and ecosystems,
- develop a simple implementable technique for assessing wetlands transition zones, and characterization of productivity of wetlands, as a tool for assessing the quality of wetlands,
- improve solid phase bioassay techniques to test toxicity of dredged and fill material,
- develop broader spectrum and more cost-effective methods for screening and quantifying organics in water and wastewater with increased emphasis in FY 81 on nonvolatile organics,
- develop more cost effective multi-element and chemical specification methods, with emphasis in FY 81 on solids,
- perform multi-media toxic and hazardous material problem assessments in local areas in response to public health concerns, in absence of State or local capabilities,
- continue study of toxic materials in publicly owned treatment works in order to develop comprehensive urban toxic pollutant control strategies,

- continue development of methodologies to assess impact of nonpoint source pollution, and perform nonpoint source assessments,

- integrate Agency monitoring efforts for priority pollutants, including establishing a single data base system and approved quality assurance,

- develop, evaluate, and report on a practical lake (quality) evaluation index (LEI) procedure to assist lake managers in interpreting lake problems and selecting corrective actions,

- assist Regions and States to develop toxic pollutant monitoring capabilities to support State/EPA Agreements, toxic wasteload allocations, water quality standards, permit setting, and permit compliance monitoring,

- continue exploratory research to identify potential pollutant problems in the future and to develop potential controls for pollution problems; to develop technologies that minimize pollution production.

- sludge: evaluate innovative and alternative technology projects; improve data on exposures of organics, metals, and pathogens from land application; develop beneficial uses, including energy recovery technologies, evaluate detoxification methods,

- small flows/land treatment: demonstrate central management of onsite systems; extend overland flow systems to colder climates; evaluate toxics management in land application systems; investigate higher rate nutrient update systems,

- investigate process development for treatment systems for small communities and combined sewer overflow management and technology; evaluate conservation/reuse demonstrations and high rate biological removal of specific pollutants; and develop surrogate control parameters,

- initiate a major program for development and demonstration of reuse/recycle technologies and to reduce intermedia impacts of wastewater treatment.

RESEARCH AND DEVELOPMENT

General R&D Management

In FY 80 and FY 81 EPA's R&D program will have three major management goals:

- Continue the integration into the main stream of the Agency's activities of all of ORD's research in support of regulation and enforcement.

- Enhance ORD's capability to provide better data for future Agency regulatory and enforcement actions.

- Improve the quality and utility of scientific and technical data used by the Agency.

Actions to be taken to achieve these goals include the following:

Establish Research Committees to cover all water quality research in support of regulations and enforcement.

Currently one Research Committee exists -- Industrial Wastewater Research. Three Committees will be established during FY 79 to cover essentially all research conducted in support of water quality regulation and enforcement.

Water Resources (relating primarily to OWPS activities).

Industrial Wastewater (broadening the existing Industrial Wastewater Committee).

Municipal Wastewater, Ocean Disposal, and Spill Prevention (relating primarily to OWPO activities).

One major concern is how to incorporate requirements and views of the Regional Offices into the Research Committee process. This will make it necessary for the Regional Offices to coordinate their participation and share responsibility for representing regional interests.

Develop an exploratory research effort which applies the Nation's best scientific capability to addressing future Agency problems.

Fifteen percent of ORD resources for water quality will be devoted to research which has the purpose of applying the best available scientific capabilities to research which looks beyond immediate (1-3 years) Agency needs or involves higher risk but potentially higher pay-off than research normally undertaken in support of regulation or enforcement. This effort will be developed by ORD in consultation with the scientific community external to the Agency. All plans for exploratory research will be reviewed by the Agency's Research Committees.

Scientific peer review of Agency research projects and reports.

Mechansims will be established to ensure, wherever feasible, scientific peer review of the plans for and results from individual research projects.

Establish an environmental criteria and assessment function.

This involves completion of the staffing and implementation of ORD's new Office of Health and Environmental Assessment in order to provide consistency in the Agency's risk assessments and provide water quality assessments upon request by the Agency.

During FY 80 and FY 81, "technology transfer" activities will no longer be planned and budgeted separately. Plans and resources for technology transfer in a given program, e.g., municipal wastewater, are to be included in Decision Units for that program.

Health and Research

- Determine the health implications of existing and new technology for the treatment, disposal and reuse of wastewater and sludge.

- Determine the health effects of priority toxic pollutants.

- Develop rapid screening tests suitable for extrapolation to man for characterization of toxic pollutants in complex effluents.

- Develop recreational water quality criteria.

Research will proceed as described in the FY 80 budget, except for the following:

- In developing screening tests which can be extrapolated to man, mammalian and in vitro tests will be considered along with bioassay tests normally used by aquatic biologists.

- Current discussions may lead to a new effort for nonpoint sources.

Environmental Processes and Effects

Freshwater environmental effects research will focus on the following priority areas in FY 80 and FY 81:

- Nonpoint source impacts, including recovery rates and montoring methods.

- Test protocols for toxics, including mutagenic and carcinogenic effects.

- Effects evaluation of complex toxic effluents.

- Test methods for the bioaccumulation potential organics.

- Environmental effects of land application of municipal wastes.

Marine environmental effects research will address:

- Methods for measuring the relative "health" of marine ecosystems.

- Simulation techniques, including "microcosms" for predicting pollutant stress on marine biota and ecosystems.

- Effects of specific pollutants from ocean dumping, outfalls, dredged materials, and other sources pollutant transformation products, and combinations of pollutants on marine biota and ecosystems.

- o Questions of wetland function and importance.

Transport and fate research goals include:

- o Expansion of selected water quality predictive models to include toxics and sediments.
- o Development and joint evaluation with OWWM of a method for determining gross environmental "mass balances" for toxics.
- o A continued, limited effort to verify selected water quality predictive models, primarily through use of existing data, with emphasis on utility for wasteload allocations and advanced waste treatment facility decisions.
- o Studies of the transport and fate of selected pollutants in the marine environment.

The Great Lakes research program will in FY 80, verify phosophorous-plankton models used in load reduction simulations, and begin an effort to expand in FY 81, research on the risks to man from toxics transported through the lakes system.

The Chesapeake Bay research program will carry through studies, just initiated, on assessing, in reference to competing uses of the Bay, existing and projected consequences of toxics and nutrient loadings on the Bay system, human health and the economy of the Bay.

Measurement and Monitoring

Measurement methods research in FY 80 and FY 81 will address:

- o Broader spectrum and more cost-effective methods for screening and quantifying organics in water and wastewater, with increased attention in FY 81 to nonvolatile organics.
- o Completion in FY 81 of identification of volatile organics in industrial effluents (in direct support of Effluent Guidelines Division, OWPS).

- o More cost-effective multi-element and chemical specification methods, with emphasis in FY 81 on techniques for soils, sediments and suspended solids.

Quality Assurance Program Activities will include:

- o Completion in FY 80 of analytic methods and quality assurance materials for consent decree toxics in sludges, ambient waters and fish tissues.
- o Evaluation of surrogate methods for toxics in effluents and sludges.
- o Evaluation of alternative monitoring methods for enforcement.
- o Quality assurance support for all Agency laboratories and Agency sponsored contracts.

Monitoring methods and systems research will include:

- o Correction of deficiencies and analytic methods for consent decree toxics in effluents, sludges and ambient waters.
- o Specifications for EPA approved Regional sampling and monitoring instruments.
- o Development of pathogen idenfication and concentration procedures.
- o Evaluation of biological monitoring systems.
- o Development of monitoring system concepts for linking Agency monitoring systems to facilitate correlation of monitoring data with health statistical data.

Technical support program will provide:

- o Remote sensing support for spill prevention and emergency oil spill response activities.
- o Monitoring and analytic support, consultation, and expert testimony, as needed.

Control Technology

In FY 80 the Industrial Wastewater Control R&D program will focus on:

- o Optimization of available treatment methods and development of innovative technologies for control of toxic pollutants.
- o Laboratory and pilot scale treatability studies for priority pollutants.
- o Development of BMP's for industrial sources not readily covered by BAT or revised BAT.
- o Technology development for control of hazardous materials spills.
- o Initiation of a major program for evaluation and development of reuse/recycle technologies.
- o Major effort to evaluate and establish ways in which to minimize intermedia impacts from wastewater pollution abatement practices.

In FY 81, the Industrial Wastewater Control Program will continue the initiatives described under FY 80, and in addition, will include:

- o Demonstration of reuse and recycle systems for those industrial segments which contribute a high number of the 129 priority pollutants in their discharge.
- o Acceleration of development of technology to support an Agency emergency response capability for the control of hazardous waste incidents of all types.
- o Technology transfer of reuse/recycle technology to industrial users.
- o Assessments and treatability studies on toxic pollutants to be added to the original list of priority pollutants.

Municipal control technology priorities will include:

Sludge:

- Evaluation of innovative and alternative technology projects.
- Assessment of exposure levels of organics, metals, and pathogens from land application.
- Development of beneficial uses, including energy recovery technologies.
- Evaluation of detoxification methods.

Toxics:

- Characterization of sources and magnitude.
- Determination and development of predictive methods for treatability.
- Evaluation of urban-wide toxics control and pre-treatment strategies.
- Evaluation of promising control strategies.

Small flows/land treatment:

- Demonstration of central management of on-site systems.
- Extension of overland flow systems to colder climates.
- Evaluation of toxics management in land application systems.
- Investigation of higher rate nutrient uptake systems.

Process development:

- Treatment systems for small communities.
- Combined sewer overflow management and technology.
- Evaluation of reuse demonstrations.

- Evaluation of high rate biological systems for removal of specific pollutants.

- Development of surrogate control parameters.

Cincinnati Test and Evaluation Facility:

- Response to short-term needs of Regions and Program Offices.

Agricultural control technology will emphasize:

- Field evaluation of best management practices, in coordination with the Model Implementation Program and Rural Clean Water Program.

- Validation of recently developed pollutant loading models.

DRINKING WATER RESEARCH GUIDANCE

DRINKING WATER

MEDIA OVERVIEW

The goal of the drinking water program is to protect the public health by assuring the safety of the drinking water.

Assuring the safety of drinking water is primarily the responsibility of State and local governments. However, Congress has determined that the Federal Government should share in this responsibility by assisting, reinforcing, and setting standards for State and local efforts.

The Safe Drinking Water Act requires (1) primary health related drinking water regulations requisite to protect the public health, (2) public water systems supervision programs (PWS) to assure compliance with the regulations, (3) underground injection control programs (UIC) to protect underground sources of drinking water, and (4) the provision of emergency assistance. The Act envisioned that the States would have primary enforcement responsibility for both the PWS and UIC programs. Moreover, the Act is designed to encourage voluntary compliance with the regulations.

The program activities will focus on implementation of the primary drinking water regulations in non-primacy States and on Indian lands, assistance on the implementation of the trihalomethane and synthetic organics regulations; maintaining a strong management program in primacy States to assure primacy implementation; continuing efforts to encourage non-primacy States to assume primacy; emergency assistance; financial assistance to States; research, development and implementation of additional regulations to control other contaminants in drinking water; implementation of a program to protect underground sources of drinking water; the initiation of enforcement actions to ensure compliance and implementation of State/EPA agreements.

Activities within each major area involve at least two of the program offices. The assignment of program office responsibilities is based on program expertise. In general, the Office of Drinking Water and its Regional counterparts will be responsible for the program activities involving on-going communications with the public, the water systems, injection facility operators, and the States. The responsi-

bilities also include laboratory certification, technical assistance and evaluations, standards development, technical expertise in regard to variance and exemption applications and other legal action, data handling and evaluation, UIC primacy application review, technical evaluation of permit applications, and sole source petitions reviews.

Drinking Water Enforcement positions in Headquarters will be devoted to the following activities: permitting and enforcement guidance for the UIC program; coordination; budget and administrative efforts; legal strategies for regional and State overview programs, including guidance on compliance monitoring and inspection; enforcement and legal assistance for regional PWS programs; and legal support for actions initiated in response to emergency situations.

Regional Drinking Water Enforcement staff will participate with Drinking Water program offices in legal aspects of issuing variances and exemptions by assisting in developing compliance schedules and interim reporting and monitoring requirements to be included in variances and exemptions to be approved by the Regional Administrator (unless otherwise delegated); providing legal and administrative support in initiating formal enforcement actions; working with ODW to ensure enforceability of compliance actions or other requirements imposed on public water systems; issuing UIC permits to facilities disposing of wastes underground; investigating and initiating civil and criminal actions for violations of the UIC regulations; and providing technical and legal support in legal actions initiated in response to emergency situations.

The Research program will relate to: (1) causes, diagnoses, and prevention of diseases and other impairments in man resulting directly or indirectly from contaminants found in drinking water; (2) the treatment and control of those contaminants; and (3) the provision of dependable, economical, and safe supplies of water, including the protection of underground sources of drinking water. Research will also be conducted to develop and implement quality assurance procedures and protocols for water supply laboratories to assure that laboratory analytical data are accurate and valid.

Planning Assumptions

The planning and operating guidance for FY 1980 is based upon the following assumptions. For consistency purposes, the Regions are requested to adopt similar assumptions in preparing their submissions.

- o Currently proposed organic regulations will be promulgated in Summer, 1979.
- o Revised drinking water regulations will be proposed in early FY 1980.
- o UIC regulations will promulgated by January, 1980.
- o By FY 1981, all 57 States will be listed as requiring underground injection control programs. They will then become eligible for grants. The following list shows for each year, the number of States first becoming eligible in that year:

  - FY 1979 - 23
  - FY 1980 - 18
  - FY 1981 - 16

- o Consolidated permit regulations will be in effect in FY 1980.
- o EPA itself will utilize the grant allocation for underground water source protection of listed States that (1) do not apply for grants or (2) indicate that they will not assume primacy for the UIC program.
- o Sole/principal Source Aquifer (1424(e)) regulations will be promulgated in Spring, 1979.
- o In FY 1980, EPA will implement public water systems supervision programs in 12 States: Indiana, Pennsylvania, Oregon, District of Columbia, South Dakota, Utah Wyoming, Illinois, Vermont, North Carolina, American Samoa, and Northern Marianas.
- o A legislative amendment extending the compliance schedule for exemptions will be adopted.

These assumptions represent the best projections based upon information available to Headquarters at this time. There undoubtedly will be changes; however, for consistency these assumptions should be reflected in Regicnal operating plans.

Media Priorities

The media priorities for FY 1980 and FY 1981 provide general guidance reflecting the National Program Managers' high priority items. These priorities may differ from one Region to another depending upon each Region's particular situation. Regions maintain the flexibility to pursue priorities which satisfy the needs of their unique situations.

- <u>Priority 1</u> activities are:

  - to establish maximum contaminant levels and/or treatment techniques to assure the safety of drinking water.
  - to implement the organics regulations.
  - to initiate enforcement actions and respond to emergency situations involving substantial threats to public health.
  - to take enforcement actions, as necessary, in non-primacy States.
  - to maintain a strong management program in primacy States including overview of State enforcement activities and grants administration.
  - to develop a coordinated ground-water policy and strategy by the third quarter of FY 80.
  - to encourage State assumption of primacy for PWS and UIC programs.
  - to implement and enforce a program for assuring compliance with the primary drinking water regulations in non-primacy States and on Indian lands.
  - to conduct research into the health effects and treatment of trace organics and investigate alternative disinfectant techniques.
  - to maximize program effectiveness and integration through the consolidated permits program, the State/EPA agreements, etc.
  - to complete the assessment of surface impoundments.

- <u>Priority 2</u> activities are:

  - to protect designated sole source aquifers.
  - to develop UIC implementation plans where necessary.
  - to investigate the relationship of inorganic contaminants and asbestos fibers on health.
  - to provide technical and legal assistance for enforcement actions in primacy States.
  - to increase public awareness and public participation.

- Priority 3 activities are:

  - to develop a coordinated ground-water research program.
  - to conduct research on direct and indirect additives.
  - to conduct studies on home water treatment devices.
  - to initiate enforcement actions in primacy States, as appropriate, where a State is unable to or fails to do so.

DRINKING WATER

Research and Development

The Safe Drinking Water Act is reasonably specific in setting forth the Agency's responsibilities, so it has been possible to develop a drinking water strategy with a "step-by-step" schedule of future activities. One major element of this strategy is to conduct research to improve the scientific and technical basis for Primary and Secondary Drinking Water Regulations (especially regulations based on Maximum Contaminant Levels -- MCL's), and regulations to protect the quality of ground water. The issues have been reviewed by a non-government advisory committee formed to update the 1962 U.S. Public Health Service Drinking Water Standards, an ad hoc group of the Agency's Science Advisory Board, the National Drinking Water Advisory Council and by the Drinking Water Research Committee during its deliberations on FY 80 research activities. These groups and others from within the Agency's Operating and Research Offices determined that research was necessary to help answer the following basic questions:

1. What substances occur in drinking water supplies at a sufficient number of locations to warrant regulation?

2. What are the effects of these substances on human health?

3. What analytical procedures should be used to monitor water to assure that the Revised Primary Drinking Water Regulations are met?

4. Because some of these substances are formed during transport, storage, treatment and distribution, what changes in treatment practices would be appropriate to minimize the formation of these compounds in water delivered at the consumer's tap?

5. What treatment technology must be applied to reduce contaminant levels to the concentrations specified in the Regulations?

The Agency has decided to focus on these broad questions in order to develop a defensible basis for standards. These same questions apply to wastewater when it is being considered as a water source for drinking. Underlying this research is a quality assurance effort that also plays an important role in the certification of non-EPA laboratories and, generally, in assuring the reliability and accuracy of laboratory analyses of drinking water samples.

The setting of research priorities has resulted primarily from the interpretations by the Office of Drinking Water and the Drinking Water Research Committee of the regulatory requirements set forth in the Safe Drinking Water Act in light of the target dates specified in that Act. These groups have given full consideration to the gaps in existing information and to the principal problems referred to them for action by the Regions, the National Drinking Water Advisory Council, and the National Academy of Sciences. The research staff, however, plays a major role in setting priorities due to their insight (derived from experience) regarding the general feasibility of broad classes of analytical measurements, the time it takes to conduct health effects and engineering experiments, and the cost of generating additional research data.

These deliberations resulted in a balanced research program that includes studies of short- and long-range health effects studies, as well as efforts to improve analytic methods and treatment techniques. Approximately 45 percent of the budget will go to health effects projects (many of which are conducted jointly with the Department of Health, Education and Welfare), 40 percent to the development of treamtment technology, 6.5 percent to improvement of analytical methods, and 8.5 percent to groundwater concerns. These allocations may change as a result of the Drinking Water Research Committee's deliberations for FY 81.

Trace organics are still the least understood and most troublesome drinking water contaminants, so approximately 43 percent of the funds are directed toward that problem. Research into trace organics will examine their health effects, and will also focus on development of appropriate monitoring and treatment technology. The second highest priority

is the impact of inorganic contaminants, particularly asbestos fibers, on health, so a large effort will be made in this area, too. We will also closely examine the implications of the difference in the incidence of cardiovascular disease between those consumers drinking soft water and those drinking hard water. Determining the incidence and effects of microbial contamination as well as developing appropriate monitoring and treatment technology for such contaminants will remain a relatively high public health priority because outbreaks of water-borne disease still occur in the United States, especially in poorly operated distribution systems. We will also study the causes of corrosion in distribution systems and possible methods for controlling it, and we will give greater attention to the development of cost-effective treatment techniques for removing contaminants from small water supplies.

The various elements of the program have been arrayed in priority order for FY 80/81.

In the short term, our highest priority will be technology development and assuring the quality of analytical methods now in use. In the long term, emphasis will be placed on health effects, development of improved analytical methods, and ground-water research.

The research strategy has been designed to develop information from which EPA can determine if there is a need to regulate additional drinking water contaminants. Furthermore, if regulations are deemed appropriate, our research information can help establish the levels at which standards should be set. Our drinking water research data will also be used by EPA's Office of Drinking Water to evaluate institutional solutions to some drinking water problems. Some of the pertinent areas are regionalized water supply systems to serve the small scale user, aid to states regarding the economics of water supply, and the management of water supply systems.

Better Methods to Identify and Quantify Contaminants -- In the absence of reliable contaminant measurement and monitoring methods, it will be impossible to provide scientifically valid and legally defensible data to support and enforce the regulations issued

under the authority of the Safe Drinking Water Act. Consequently, primary emphasis will be placed on continuing our quality assurance program in EPA, state, local, and contract laboratories.

Objectives	Major Research
Priority 1	
- Continuing quality assurance functions	- Quality assurance program to support monitoring requirements for Safe Drinking Water Act performance evaluations, etc.
- Analytical methods for organics	- Analytical methods for nonpurgeable organics.
- Surrogate methods for measurement of classes of organics	- Surrogate methods for measurement of volatile organic compounds.
Priority 2	
- Analytical methods for microbial contaminants	- Methods to determine presence of cysts and viruses.
	- Radiometric methods for detection of sanitary indicator microorganisms in treated water.
	- Analysis of ATP (adenosine triphosphate) methods for monitoring bacterial levels.

Priority 3

- Multielement analytical techniques	- Comparison of several methods of multielement analysis, i.e., optical emission spectrometry with an inductively coupled plasma source and x-ray fluorescence.

Better Treatment Technology for Drinking Water -- The lack of unequivocal health effects data related to organic contaminants in drinking water does not relieve EPA of responsibility for developing appropriate treatment methods when reasonable doubt about health effects exists and monitoring is not practical. The development of treatment processes to control organic compounds will be the first priority in the area of treatment technology. Organic contaminants selected for study will be identified in surveys that quantify the prevalence of the compounds and identify available health effects data. Treatment processes will then be developed through bench and pilot-scale studies and will be studied in field evaluations. We will attempt to adopt some processes now used in larger treatment systems for use in the smaller systems. In doing so, our objectives will be to keep the technology simple enough so that the training required for operators will be minimal.

The two immediate needs in the inorganics area are: to develop treatment processes that will enable small systems to meet regulations economically, and to evaluate treatment processes for removal of asbestiforms. A further objective will be the development of treatment processes to control other inorganic compounds in small systems, with primary emphasis on the more troublesome inorganics such as nitrates, arsenic, fluorides, and selenium.

The major thrust in the area of treatment technology to reduce microbial contaminants will be the evaluation of alternative disinfection methods with emphasis on (1) small systems and (2) preventing the deterioration of water quality in distribution systems.

Objectives	Major Research
<u>Priority 1</u>	
- Processes for organics control including alternative disinfection technology	- Field studies involving carbon adsorption methods for organics control.
<u>Priority 2</u>	
- Processes for inorganics control with emphasis on small systems	- Bench-scale studies of techniques for controlling fluoride, arsenic, nitrates and selenium.
	- Field studies to evaluate full scale operations of promising inorganics control methods that were successful at bench scale.
	- Field studies to evaluate processes for removing asbestiforms.
	- Special studies to provide treatment methods for small systems, e.g., reverse osmosis, ion exchange, activated alumina.

Priority 3

- Microbial control technology
  - Virus and parasite removal.
  - Identification of factors affecting growth of micro-organisms in distribution systems.
  - Development and evaluation of alternative indicators of disinfection efficiency.

Health Effects -- As of April 1978, 698 organic compounds had been identified in drinking water within the United States. While important information on incidence, concentrations, and health effects still needs to be developed, a number of these compounds are already strongly suspected to be detrimental to health. Therefore, we will first attempt to assess the health effects of certain of these organic compounds. The focus of this health effect research will be on potential carcinogenicity. Because there is such a large number of compounds, our research will follow two distinct avenues of investigation. First, we will examine those compounds which have already been identified as potential human health hazards. Our second avenue of investigations will focus on various groupings of compounds selected on the basis of their high observed concentrations and high frequency of occurrence, in conjunction with preliminary determinations of significant hazard based either on available data or on short-term bioassays.

Considerable attention has been given to the relationship between the presence of inorganic compounds in drinking water and cardiovascular disease. The National Academy of Sciences predicted a possible 15% reduction in heart disease mortality by manipulation of the hardness of the nation's water supplies but

stressed that the specific alterations that would be appropriate have yet to be determined. The Council on Environmental Quality has also published information that suggests a correlation between water softness and heart disease. As with organics, we will continue to develop health effects information on these various inorganic compounds.

Objectives	Major Research
Priority 1	
- Health effects of organic compounds and alternative disinfection techniques	- Concentration and chemical characterizations of organic compounds from tap water in five cities. - Selection and evaluation of indices of organics significant to health. - Association between cancer and exposure to drinking water contaminants. - Selection of organic parameters which can be used for standard setting. - Toxicological and epidemiological studies to validate the health signifigance of organic parameters. - Health impacts of the use of alternative disinfection techniques.

Priority 2

- Health effects of inorganic compounds	- Health effects of arsenic.
	- Neurochemical effects of lead.
	- Carcinogenic potential of nitrate.
	- Health effects of asbestiforms.
	- Inorganics and cardiovascular disease.
- Health effects of additives used in treatment and distribution of drinking water	- Assistance in developing protocols and implementing the program.

Priority 3

- Protect drinking water from microbial contamination	- Annual review of waterborne disease outbreaks.
	- Characterization of the etiological agents of viral gastroenteritis and giardiasis.

Scientific Basis for Protecting Ground Water Quality -- A primary objective of the program is to identify major problems in the protection of ground water and to provide the appropriate assessment methods to States and communities. A corollary objective is to develop scientific and engineering guidelines on which we can base source control criteria. Work on assessment

methods will include development of biological and chemical indicators of ground-water pollution, methods to detect pressure increases resulting from well injections, and protocols for determining, in any given locality, the probable impact of specified activities with known pollution potential.

Objectives	Major Research
Priority 1	
- Assessment methods for monitoring the transport and transformation of ground water contaminants	- Biological and chemical indicators of ground-water pollution.
	- Pressure increases resulting from well injections.
	- Transport and transformation of hazardous materials.
Priority 2	
- Establish scientific basis for controlling various classes of pollutant sources	- Petroleum exploration and development.
	- Land application of waste.
	- Artificial recharge.
	- Agricultural practices.
Priority 3	
- Identification of major ground-water pollution problems	- Extension of State-specific studies from the current 34 States to 50 States.

Changes Anticipated - FY 80/81

- The ORD public health initiative for FY 80 includes an increase of nearly $5 million over the FY 79 level for health research. These resources will be used to intensify our research into the health risks posed by organic, inorganic, and microbial contaminants. A strong emphasis will be placed on organic compounds and their carcinogenic potential. ORD will initiate the development of an investigative strategy which will help address systematically the numerous organic compounds that have been identified as being of potential concern. Emphasis on the public health initiative will continue in FY 81.

- In FY 80 and 81, we will emphasize field evaluations of modular treatment methods for control of organics. Information from these field evaluations will be used to guide regulation development and implementation.

- In accordance with a congressional mandate, ORD expanded research into the reuse of wastewater for potable purposes by $8 million in FY 1979. $1 million for the reuse program is in the FY 80 research budget for drinking water. ORD plans to budget the $1 million for FY 81 within the research budget for water quality.

SOLID WASTE RESEARCH GUIDANCE

SOLID WASTE

MEDIA OVERVIEW

The Solid Waste Media is concerned with the national management of three Resource Conservation and Recovery Act (RCRA) programs: the Subtitle C (hazardous waste) program; the Subtitle D program for the management of wastes not classified as hazardous; and the Technical Assistance Panels program, designed to support the two foregoing efforts by providing implementation assistance.

Media Priorities

The first priority of the Solid Waste Media is the national management of the hazardous waste program. All Subtitle C regulations are expected to be promulgated by December 31, 1979, and to become effective in July 1980. The major hazardous waste activities of the Solid Waste Media are responding to emergencies (highest priority), issuing guidance for implementing the regulations, assisting in the defense of the regulations against court challenges, authorizing and overseeing State programs, conducting Federal enforcement activities, and identifying, evaluating and enforcing against facilities which may pose imminent hazards (to be referred to as problem sites).

The second priority is the national management of the Subtitle D program. In 1980, high priority activities will include management of the land disposal site inventory, State program development and management of grants under the President's Urban Policy program.

The third priority is the Technical Assistance Panels program.

Planning Assumptions

The Solid Waste Guidance for 1980 is based upon the 1980 President's Budget. This budget does not include adequate resources to handle the priority activities listed earlier. There are substantial resource shortages in many areas, but particularly for identifying, evaluating and enforcing against abandoned or problem hazardous waste sites. There are, however, several uncertainties regarding resources for handling abandoned or problem sites that could significantly alter this Guidance. This section will describe the assumptions used within the limits of the 1980 President's budget, and will also describe in some detail the uncertainties that exist regarding resources for solid waste in FY 1980.

Base Level Assumptions

o Schedule of Regulations:

Section of RCRA	Promulgation Date
3001, 3002, 3003, 3004	12/31/79
3005, 3006	10/31/79
4004 and 1008(a)(3)	07/31/79
1008(a)(1)	01/31/80
4002(b)	06/30/79
405 (Clean Water Act)	08/31/80

0 FY 1980 Grant Levels:

Hazardous waste - $18,600,000

Solid waste - $10,000,000

Urban Policy program - $13,950,000

(See Table 1 for State allocations)

0 Subtitle D grant funding:

- Declining at a rate of $2 million per year for 5 years
- To fund high priority activities only (inventory, State regulatory program, State plan development)
- No pass-through unless clearly supporting high priority activities

0 Permitting function will be split in all budget documents (irrespective of Regional organization)

- Abatement and Control will handle technical reviews
- Enforcement will handle administrative processing and compliance monitoring

FY 1981 State Grant Allocations

	Subtitle C	Subtitle D
ALABAMA	362,328	159,100
ALASKA	160,146	50,000
ARIZONA	235,848	81,300
ARKANSAS	125,736	88,800
CALIFORNIA	1,472,562	921,300
COLORADO	188,604	102,000
CONNECTICUT	222,084	140,000
DELAWARE	93,000	50,000
DISTRICT OF COLUMBIA	93,000	50,000
FLORIDA	483,414	313,500
GEORGIA	316,944	212,000
HAWAII	93,000	50,000
IDAHO	103,044	50,000
ILLINOIS	870,108	513,400
INDIANA	572,880	239,900
IOWA	173,724	130,500
KANSAS	164,610	103,800
KENTUCKY	322,524	148,700
LOUISIANA	610,080	167,700
MAINE	93,000	50,000
MARYLAND	253,890	181,200
MASSACHUSETTS	395,994	262,800
MICHIGAN	761,856	410,000
MINNESOTA	223,386	175,800
MISSISSIPPI	127,224	102,400
MISSOURI	290,160	216,000
MONTANA	106,764	50,000
NEBRASKA	93,186	68,500
NEVADA	93,000	50,000
NEW HAMPSHIRE	93,000	50,000
NEW JERSEY	553,722	331,100
NEW MEXICO	93,000	50,000
NEW YORK	1,043,088	842,400
NORTH CAROLINA	365,118	234,700
NORTH DAKOTA	93,000	50,000
OHIO	1,015,188	492,000
OKLAHOMA	172,794	118,200
OREGON	245,334	96,500
PENNSYLVANIA	1,014,816	544,900
RHODE ISLAND	121,272	50,000
SOUTH CAROLINA	272,862	119,700
SOUTH DAKOTA	93,000	50,000
TENNESSEE	478,020	181,200
TEXAS	1,855,722	517,200
UTAH	119,040	50,000
VERMONT	93,000	50,000
VIRGINIA	237,150	214,700
WASHINGTON	271,932	157,500
WEST VIRGINIA	343,542	80,600
WISCONSIN	353,028	204,100
WYOMING	93,000	50,000
AMERICAN SAMOA	93,000	50,000
GUAM	93,000	50,000
PUERTO RICO	105,276	125,300
NORTHERN MARIANAS	93,000	50,000
VIRGIN ISLANDS	93,000	50,000
TOTAL	18,600,000	10,000,000

	C	D
REGION I	1,018,350	602,800
REGION II	1,795,086	1,348,800
REGION III	2,035,398	1,121,400
REGION IV	2,728,434	1,471,400
REGION V	3,796,446	2,035,200
REGION VI	2,857,332	941,900
REGION VII	721,680	518,800
REGION VIII	693,408	352,000
REGION IX	2,173,410	1,253,600
REGION X	780,456	354,100
TOTAL	18,600,000	10,000,000

- 0 Penalty policies, enforcement strategies and implementation plans will be prepared during FY 1980

- 0 No specific funding is provided in 1980 President's budget for the discovery and evaluation of abandoned and problem hazardous waste sites

1979 Reprogramming -- Although no specific funds have been provided in either the 1979 or 1980 budget for the discovery, evaluation and enforcement activities associated with abandoned hazardous waste sites, considerable activity of this type is presently ongoing. It has been estimated that approximately 30 workyears of effort are being expended on this activity, utilizing Headquarters and Regional solid waste enforcement, and surveillance and analysis resources. The effort is not spread evenly among the Regions, but appears to be related to the number of problem sites per Region.

Two enforcement cases related to problem or abandoned sites have currently been filed, and eight more are expected within FY 1979. In the next 18 months, it is anticipated that another 12 to 18 cases will be evaluated, and remedied either through voluntary action by the owner or through Federal and/or State actions, including litigation. An increase in resources, estimated at an additional 20 manyears of effort, will likely be expended on this effort. This would bring the total Regional effort on problem abandoned sites to 50 manyears. It appears that even without official recognition of this priority charge, the current reprogrammed resources will continue to function on the abandoned site problem. This implies, however, that resources will be unavailable to implement the regulatory program.

Request for Supplemental Funds -- EPA is requesting supplemental resources of $108.8 million and 113 positions for FY 1980 to undertake an active program of discovering and investigating, as well as responding to emergency actions and conducting enforcement actions concerning abandoned and inactive hazardous waste facilities that present an imminent hazard to public health or the environment.

The proposed program will have five parts: discovery, reconnaissance investigation, full investigation, enforcement and where essential, emergency action. The program will be implemented by the EPA's Regions and, in fact, by the States wherever possible. To accomplish

this, EPA has already established a new institutional structure of national and Regional coordinators and has issued a change in programmatic priorities that will result in the reprogramming of approximately 50 workyears into this program. Also, EPA is preparing to convene a three-day workshop to orient the appointed coordinators and train participating personnel. Although EPA has some experience in acting on abandoned/inactive site incidents, the techniques for investigating cases, protecting the safety of investigating personnel, documenting data and preparing cases are still to be perfected and many of the personnel that will be investigating and bringing enforcement action on abandoned/inactive sites will need additional training and experience.

The discovery of abandoned/inactive sites will basically involve receiving (or otherwise obtaining) and recording leads on suspected sites. Currently there is no formal mechanism for the discovery of problem sites. Most of the known problem sites have been identified through informal communications with States and through citizen complaints. This portion of the program will systematize the documentation of information received from various sources. It will also involve several low-cost efforts to search for undiscovered sites. The discovery component of the program will be institutionalized and carried out throughout the 18 months of the program and thereafter.

The reconnaissance investigation component of the program will involve making a preliminary investigation of those sites identified as suspected problem sites in the discovery phase of the program. Supplemental funds of $1.5 million in FY80 are requested for this work.

The full investigation component of the program involves conducting extensive field investigations, in-depth sampling and analysis, and other related studies on sites identified by the reconnaissance investigation as being potential significant hazards.

It is projected that approximately 300 sites can and should be investigated over the next 18 months. At a cost of 5.5 workyears per site, this workload (930 workyears) would far exceed the current resource capacity of EPA and would even exceed EPA's capacity to hire and train personnel if additional personnel were authorized. Accordingly, it is proposed to use as many as 30 contractors under level-of-effort contracts to supplement State and

Regional resources under case-by-case task orders to conduct full investigations. There are contractors available for such an effort.

It is assumed that 225 sites can be investigated by the States, but with varying amounts of EPA assistance from the above-described contracts. The remaining 75 sites would be fully investigated by EPA also using contractors. It is further assumed that all of this effort would be performed in FY 1980 following discovery and reconnaissance activities in FY 1979. Using these assumptions, the full investigation component of the program will cost $53.2 million. To manage the contractual effort, and provide quality assurance, a limited number of in-house experts, 43 additional positions and $1.7 million will be required. Accordingly, supplemental resources of 43 positions and $54.9 million are requested for FY 1980.

The enforcement component of the program will involve bringing suits to require responsible parties to take corrective actions. This phase encompasses the preparation of legal cases and the additional technical work and investigations necessary to support such cases. It is assumed that following full investigations, the States will assume responsibility for enforcement action through State courts in 50 cases, with varying amounts of EPA assistance, and that EPA will pursue action on 50 cases under Federal authorities. Using workload experience to date in similar enforcement actions, 60 additional personnel and $2.4 million will be required in supplemental funding for FY 1980.

The emergency response component of the program will involve Federal funding of clean-up actions deemed necessary to immediately contain extremely hazardous situations. This will include action such as the removal of drums of chemical wastes from navigable waters and drainages into navigable waters (e.g., Louisville, Kentucky), the segregation and removal of drums of chemicals that pose a fire or explosion threat or which are leaking into the environment, and the temporary containment of subsurface migration of toxic chemicals through the construction of drains or other means (e.g., Love Canal). These actions will not cover permanent remedy. They will be employed where a responsible party is not available or refuses to take the emergency action. Whenever possible, recovery of costs will be sought from available responsible parties. Also, enforcement/injunction actions will be concurrently taken wherever possible.

Of the projected 300 sites that will be fully investigated, it is assumed that 20 sites will require critical emergency response. At an assumed average cost of $2 million, $40 million will be required. It is proposed that 75 percent of these 20 emergency actions can be taken under the response authority of Section 311 of the Clean Water Act and that the remainder will have to be addressed under Section 504 of that Act. Accordingly, $30 million is requested to supplement the Section 311 fund and $10 million is requested to fund the Section 504 authority. Five additional positions are requested to manage these clean-up actions which are very complex and long-term compared to oil and hazardous materials spills.

In addition, it is assumed that at least five sites will require emergency response requiring application of innovative technology. The La Bounty site in Charles City, Iowa, is a good example. To deal with these situations, 5 additional positions and $10 million are requested.

In summary, 10 positions and $50 million are requested for emergency response actions.

Overall, the following supplemental resources are requested for the proposed program:

	FY 1980	
Component	pos	$1,000
Discovery	-	-
Reconnaissance Investigation	-	1,500
Full Investigation	43	54,900
Enforcement	60	2,400
Emergency Response	10	50,000
	113	108,800

It should be noted that this proposed 18 month program is designed to address only a small part (300) of the estimated potential universe of significantly hazardous abandoned/inactive sites. Continuing activity beyond FY 1980, at the same or higher level, is expected.

SOLID WASTE

Research and Development

The Resource Conservation and Recovery Act requires that hazardous waste be identified, separated and managed so as to assure environmental protection. Because of the relatively small amount of research in the past, the information available on the quantities and characteristics of hazardous wastes and on the costs and capabilities of environmental control options is limited.

The awareness of and concern over hazardous wastes has increased very substantially. As the Agency has moved to use the authorities of the new legislation, information on the actual size of the hazardous waste problem has begun to be available. Several aspects emerge as particularly acute. First, an appreciation has developed for the number and size of unaccpetable facilities that are now in operation or have been abandoned. Second, the long term environmental consequences of storage, disposal or destruction alternatives is quite uncertain. The costs of these different alternatives can vary considerably. Third, a desirable degree of general knowledge or accuracy in characterizing wastes and control options does not exist. At the present time each individual waste and the proposed management practices must be evaluated separately to establish costs and performance. Without detailed studies in each specific case, projections of acutal operating characteristics are presently impossible. Fourth, as the requirements and costs for managing hazardous wastes increase, present waste generation patterns and practices will change. Our understanding of how waste generators, transporters, and disposers will respond to increased costs are limited. For example, a regional liquid and solid waste management facility may be the least expensive and most effective option for metal plating and finishing firms. However, the costs of a facility designed for an existing situation may affect the economics of these firms enough to change their operations.

The purpose of this section is to present issues and questions inherent in the current planning of EPA's research effort in hazardous waste management. The concerns raised here are meant to stimulate thought and discussion to produce a better designed and executed research and development program.

Program Office Views on Research and Development

The Office of Solid Waste has not and does not rely upon or assign high priority to research in solving the hazardous waste problem. Their position is founded upon four separate points.

- Effective programs for dealing with hazardous wastes and rectifying unaccepatable or abandoned sites will cost tens of billions of dollars. The technological problems in establishing these programs are remarkably small compared with the problems of obtaining the necessary financial and institutional commitment.

- The Office of Management and Budget has decided that EPA will not undertake a grant program to either plan or site hazardous waste facilities or to finance their construction.

- RCRA calls upon EPA to establish rules for the disposal of future wastes. Research results will not be available on a schedule compatible with the legislated requirement. Resources to generate the information for rule making are $20 million less than that required, resources for research should therefore be minimal.

- Research and development efforts cannot yield results quickly enough to respond to the problems of abandoned or unacceptable facilities. These facilities must be addressed with presently avaliable technology.

Is objective information available that establishes that aspects of dealing with the hazardous wastes are, in fact, critically limited by lack of knowledge? Are there cogent reasons to believe that Federal R&D should generate that knowledge?

Research Required

An effective research program for solving the problems of managing hazardous wastes must address a variety of subjects. Planning such a program must systematically identify these problems. One approach is to divide the research into three general areas:

- The costs and capabilities of alternative hazardous wastes disposal options are not well documented. Options include storage or landfilling, fixation, detoxification, and incineration. Efficient procedures for dealing with various types of wastes have not been demonstrated.

- The characteristics and quantities of wastes from various sources have not been well documented. The properties of wastes that must be known to allow safe and effective disposal have not been catalogued in a comprehensive fashion.

- Regional hazardous waste problems at abandoned, existing and future sites may differ. Techniques have yet to be developed that will lead to efficient regional waste management or minimization systems.

What structure should be used in planning a research and development program? What types of problems and activities should be included?

Other Solid Waste Research

ORD's research program now includes activities in both hazardous and municipal solid waste. In addition, the activities are directed to defining environmental problems as well as to solving them. The problem definition research activities include health effects, measurement and environmental assessment. The problem-solving activity includes technology research, development, demonstration, evaluation and technology transfer.

Is the scope of research program inappropriate? Should research on specific topics be terminated? Should research be initiated on new topics?

Research Management

At the present time, three separate laboratories conduct research on solving hazardous wastes. The mission of the two IERL's is defined by industrial sector and deals with all environmental problems, including hazardous wastes. Within the IERL's the organizational structure follows industrial sectors. At the MERL solid wastes are assigned to a single division and the division's structure reflects alternative control technolgies.

ORD has not specifically addressed the problems of designing a research program on hazardous wastes and has not clarified divisions between organizations' responsibility. How might such a clarification be accomplished.

What structure should be used in planning a research and development program? What types of problems and activities should be included?

Research Planning

The Office of Research and Development is reexamining thoroughly all of its present research in solid waste and the emerging R&D needs of the Agency. This examination includes all facets of research and development activity and will not be restricted to present, or proposed technology program.

The activities will be divided into categories:

Municipal Solid Wastes
Waste-as-Fuel (Energy Funding)
Health Research
Transport and Fate of Pollutants
Quality Assurance, Measurement and Monitoring
High Volume Mining Wastes
High Volume Energy Wastes (Energy Funding)
Thermal Decompostion
Hazardous Waste Treatment
Containment
Waste Characterization
Regional Hazardous Waste Management
Abandoned Facilities Response

Documents are being developed in each area that will define the research needs, goals and outputs. These documents also define alternative program levels in each of the thirteen areas. The Office of Solid Waste and other interested parties will evaluate and rank the program options. This ranking will provide the direction for the FY-80 and FY-81 research programs.

TOXIC SUBSTANCES RESEARCH GUIDANCE

TOXIC SUBSTANCES

MEDIA OVERVIEW

Planning Assumptions

The FY 1980 toxic substances abatement and control program activities and outputs are based on assumptions about resource status and on program activity level. The significant programmatic assumptions are related to actions external to the toxic substances program. The major one is that we will receive 400 premanufacture notifications annually for review. We expect that the Interagency Testing Committee will continue to make recommendations for priority testing up to the statutory limit of 50 chemicals. We are assuming that we will receive industry substantial risk notifications at the same rate as up to now. Requirements for industry assistance are assumed to remain fairly constant overall. We expect that many of the actions the Agency takes initially will be the subject of petitions and suits and that this will require significant program effort to respond. We have assumed that section 28 State grant authority and funding authorizations will not be extended beyond FY 1979 by Congress. We assume that imminent hazard actions under TSCA section 7 will be nonexistent or nearly so. These assumptions will also apply to FY 1981. No legislative changes are assumed for FY 1980.

Abatement and control resources for the Regions will provide for a minimal program level. Only a small amount of resources are provided for necessary actions resulting from regulations. Coordinative resources are provided for Regional integratic , but it is assumed that other media will provide resources for activities to control toxic chemicals which are being integrated. No resources are provided for toxic chemical emergencies or other activities not required to support legislatively mandated functions.

Output levels are based on the assumption that the program operates at the full programmed resource level in both FY 1979 and FY 1980. This assumes that we will be able to locate, hire, and integrate into our organization large numbers of people with necessary skills and use our contract money effectively. This in turn depends on having adequate space when needed and necessary administrative support.

Finally, because this is a new program, we have had to base many output levels on models of resource needs and projections of program design rather than on actual experience.

The toxic substances enforcement program anticipates that by the end of FY 1980, the Agency will have promulgated several TSCA section 4 testing standards, including oncogenicity, chronic toxicity, and combined oncogenicity and chronic toxicity standards. In addition, a section 4 testing rule, requiring the submission of test results data relating to health and environmental effects, will have been promulgated and 20-30 chemicals selected for testing under this regulation. Standards for providing test data in support of a premanufacturing notice under section 5 will also have been promulgated, and a number of section 5(e) and 5(f) rules or orders will have been issued. An additional section 6 rule is expected to become effective by the end of FY 1980. Under section 8(a), the Agency will have promulgated a use/exposure rule gathering information on 2000-3000 chemicals. In addition to individual section 8(a) information rules for a few selected new chemicals, model rules will be issued under sections 8(a), (c), and (d). Finally, regulations governing the importation of chemicals will be in place.

FY 1981 will bring additional chemical control regulations under section 6. New section 4 testing rules and new rules and orders under section 5(e) and 5(f) are also expected. Furthermore, additional section 8(a) reporting regulations will be finalized by the close of FY 1981.

The enforcement resources necessary to adequately monitor compliance with these program activities will, for the most part, be cumulative. We assume that resource allocations to existing programs will decrease with time. The net effect of the promulgation schedule, however, will be to increase the demand for enforcement resources.

Research and development planning assumptions will be identified through the research committee mechanism which is being established presently for the toxic substances media.

Media Priorities

The FY 1980 and 1981 toxic substances programs reflect increasing levels of program activities and outputs. These expanding activities are based on the necessary foundations for program operation such as a chemical selection and priority setting system, assessment process, premanufacture review process, including testing guidelines for new chemicals, and data management systems and capabilities for the most part being in place and functioning. These activity levels also require that expedited procedures be in place for such activities as reporting and recordkeeping rulemaking and for control actions on new chemicals, which must be taken quickly in order to be effective.

In FY 1980, we will continue establishing these toxic substances abatement and control program foundations while more fully operating most aspects of the program. We will put priority on making the premanufacture review program fully operational, in order to review new chemicals and take action on those that may be hazardous before their release into the environment. We will also emphasize development of rules to obtain testing data upon which to make chemical assessments in support of regulatory actions. We will begin to increase our emphasis on control of existing chemicals which are identified as hazards through our assessment process. We will operate a priority setting system for choosing chemicals for testing and regulation under TSCA and other statutes, in conjunction with the Toxic Substances Priorities Committee. In FY 1981, we will emphasize full operation of all major program components. We will place a balanced emphasis on regulation of new and existing chemicals based upon the information base we establish in FY 1979 and 1980. We will operate an integrated priority setting system for choosing chemicals for testing and regulation under TSCA and other statutes in conjunction with the Toxic Substances Priorities Committee. Public participation in these key programs will be emphasized in both years.

The Office of Enforcement will concentrate its FY 1980 and FY 1981 resources on the enforcement of those regulatory programs which provide the most effective means of (a) abating threats to public health or the environment due to chemical contaminants, (b) gathering accurate and comprehensive data concerning the universe of potentially harmful substances, and (c) monitoring compliance with existing standards to determine that regulated chemicals are handled as required, and (d) assuring the integrity of the regulatory program. Based on these criteria, the following priority hierarchy has been established.

Emergency Response -- Since emergency situations by definition present a direct and substantial threat to public health or the environment, coordinating Agency response to such imminent hazards will be the highest priority for the Office of Enforcement. The Office of Enforcement will bring actions under section 7 of TSCA for such injunctive relief as may be necessary to remedy the risk at hand. Moreover, the Office of Enforcement will actively enforce the requirement under TSCA section 8(e) that persons immediately report any emergency incidents of environmental contamination. Finally, every effort will be made to use, where appropriate, emergency response tools available under other environmental statutes such as the Solid Waste Disposal Act.

Premanufacture Notification - TSCA Section 5 -- Because the premanufacture notification requirement contained in section 5 of TSCA can be used both to gather information and to reduce the risk of hazardous chemicals being introduced into commerce, monitoring compliance with this requirement is a high priority. The proper implementation of the section 5 screening mechanism will allow the Agency (a) to prevent hazardous substances from reaching the marketplace, and (b) develop a more accurate profile of the chemical industry.

Chemical Control Actions - TSCA Sections 6, 5(e), and 5(f) -- Chemical control regulations constitute the primary means by which the Agency directly controls risks to public health and the environment. Section 6 rules on PCBs, CFCs, and any other substances in effect will receive special attention. Since rules or orders issued under TSCA section 5(e) and 5(f) (in conjunction with the review of premanufacture notices) also impose chemical-specific controls, the enforcement of the terms of such rules or orders will receive the same priority as that assigned to other chemical control enforcement activities.

Information Gathering - TSCA Sections 4 and 8 -- TSCA sections 4 and 8 provide the principal authority for obtaining information regarding chemical toxicity and exposure. Since a violation of section 4 or section 8 does not directly endanger health or the environment the enforcement of these programs receives a lower ranking than the compliance monitoring activities described above. The Office of Enforcement recognizes, however, that since the success of other TSCA sections depends upon the integrity of the data received under sections 4 and 8, the Office of Enforcement must provide the resources necessary to assure that the information received under these programs is valid and complete.

Imported Chemicals Control - TSCA Section 13 -- A smaller portion of resources will be used to inspect imported chemicals at U.S. ports of entry. The Office of Enforcement will monitor imported chemicals in cooperation with the U.S. Customs Bureau. Developing a specific protocol to control imported substances will also be a part of the strategies devised to enforce each of the programs listed above.

Federal Facility Enforcement -- By the end of FY 1980, it is expected that all, or almost all, Federal facilities which are major sources will be in compliance with applicable TSCA regulations and most minor source Federal facilities will also be in compliance. Regions should assure

that all Federal facilities do indeed come into compliance as soon as possible, and no later than the end of FY 1980.

Apart from the enforcement of the substantive mandates of TSCA, the Office of Enforcement will enhance the efficiency of its compliance monitoring management system during FY 1980 and 1981. Among the many programs which will be implemented to achieve this objective, the Office of Enforcement will focus on the following activities.

Multi-Media Enforcement -- The Office of Enforcement plans to implement an intra-agency multi-media approach to toxic substances enforcement. As appropriate, the Office of Enforcement will use both the enforcement tools and the resources available under other EPA-administered programs to integrate compliance monitoring and enforcement activities.

Inter-Agency Cooperation -- To further expand inspectional resources, the Office of Enforcement will work with participating agencies of the Interagency Regulatory Liaison Group (IRLG) to (a) develop cooperative joint, referral, and crossover inspection programs, and (b) coordinate complementary compliance monitoring programs.

Evaluation of the TSCA Enforcement Program -- The Office of Enforcement will continue to evaluate and refine its compliance monitoring and enforcement programs in FY 1981. As part of this procedure, the Office of Enforcement will establish a formal, automated system of processing information generated through compliance monitoring and enforcement activities. It will also conduct a periodic review of Regional programs and will establish a Regional team to evaluate Headquarters performance.

Research and development priorities for toxic substances will be established jointly by the research committee participants.

Major Objectives

The abatement and control program objectives are to implement the Toxic Substances Control Act's policy that (1) adequate data should be developed with respect to the effect of chemicals on health and the environment and that the development of such data should be the responsibility of those who manufacture and process the chemicals, and (2) adequate authority should exist to regulate chemicals which present an unreasonable risk of injury to health or the environment. These objectives include the information related activities of developing test standards and applying them to specific chemicals by rule to obtain test data from industry, establishing reporting and recordkeeping requirements to obtain existing information on chemical substances, setting requirements for submission of information by industry on new chemicals and significant new uses, monitoring for field data, implementing and operating data management systems, and exchanging nonconfidential information with other programs, Federal agencies, States, public interest groups, and the general public. It also includes scientific assessments of effects, exposures, and risks for new and existing chemicals based upon this information and technical determinations of control options, including economic considerations. Control related activities include taking formal actions on the manufacturing, processing, distribution, use, and disposal of new and existing chemicals under TSCA authorities, referring action to other programs or agencies, and taking nonregulatory approaches.

The fundamental objective of the toxic substances enforcement program is to protect public health and the environment from unreasonable risks posed by chemical substances regulated under the Toxic Substances Control Act. The risk abatement process will be accomplished through:

(1) The implementation of a program to prevent or respond to toxic substances emergencies and notices of substantial risk,

(2) The achievement of compliance with the substantive requirements of TSCA and regulations promulgated thereunder,

(3) Assuring that information gathered under TSCA is accurate and complete so that correct assessments of toxicity and exposure can be made, and

(4) The expansion of inspectional resources and improvement of the TSCA enforcement management system.

Research and development objectives will be established through the research committee for toxic substances.

TOXIC SUBSTANCES

Research and Development

Plans and Priorities/Changes -- In FY 1980 and and FY FY 1981, EPA's R&D program will focus on three management priorities:

- o Continue the integration of ORD's research into the Agency's activities.
- o Enhance ORD's capability to improve the scientific and technological data for future Agency regulatory and enforcement actions.
- o Improve the quality and utility of the scientific and technical data used by the Agency.

Plans for accomplishing these priorities include the following:

- o Establish research committees to oversee the joint planning of all toxic substances research in support of regulations and enforcement. Three committees are proposed:
  - Pesticides established in FY 1978 (relating primarily to the Office of Pesticide Programs).
  - Testing and Assessment to be established in FY 1979 (relating primarily to the Office of Testing and Evaluation and the Office of Program Integration and Information).
  - Chemical Control, deferred (relating primarily to the Office of Chemical Control).

These committees will develop multi-year research strategies and will incorporate requirements and reviews of the Regional Offices. To accomplish this, it will be necessary for the Regional Offices to coordinate their participation and share responsibility for representing Regional interests.

- Review all longer-term research efforts underway in ORD to assure that the best scientific capabilities are being directed toward the most important future problems. Fifteen percent of ORD resources for toxic substances R&D will be devoted to existing and future broader-based, longer-term research efforts to build an improved data base.

- Plan and implement the Agency's Public Health Initiative which will provide an integrated data base for assessing the significance of human exposure and adverse human health effects from chemicals and chemical mixtures released into the environment. This will include the establishment of a National Neurotoxicology Research Facility to serve, particularly, the Federal agencies forming the Interagency Regulatory Liaison Group. Also within this initiative are cooperative programs which include NCI, OTS, and ORD. These programs involve research to develop enough basic data relating to chemicals, animal species, and biological mechanisms to permit estimates of human effects.

- Establish mechanisms to assure, wherever feasible, peer scientific review of the plans for and results from individual research projects, bringing to bear on the program design the best scientific advice available.

- Establish an environmental criteria and assessment function to provide quality control for the Agency's risk assessments and develop a program for quality assurance of biological research and testing.

FY 1980 Health Research

The health research program will focus on developing new and improved techniques for rapid, reliable and economical screening of toxic substances to provide scientific data for regulating new and existing chemicals in the marketplace. Efforts will also be directed toward improving the reliability of studies on the carcinogenic effects of ultraviolet rays. These plans include the following priorities:

- Perform epidemiological studies of the reaction of human populations to environmental toxic chemicals, for example, epidemiology in the area of human reproduction and sterilant effects.

- Develop methods for analytically determining the exposure history of specific populations to chemicals in general.

- Develop screening techniques for determining means of detecting the effects of toxic substances on the nervous system and evaluate the significance to humans.

- Develop rapid, reliable and low-cost screening techniques using bioindicators for assessment of the commercial chemicals reaching the environment.

- Develop testing procedures and techniques to measure effects of toxic substances on the immune system.

- Examine the feasibility of using the toxicology of aquatic and mammalian organisms as short-term testing indicators of human health effects.

- Apply the time-to-tumor model to reduce time required for obtaining carcinogenicity test results.

- Test personal dosimeters, develop models to forecast UV-B skin cancer incidence and compare the economic value of reduced risk of skin cancer to future generations.

FY 1981 Health Research

The FY 1981 research plan will include the continuation of the research identified for FY 1980 and will expand the parameters to support development of testing standards for existing chemicals as required under TSCA section 4.

FY 1980 Changes

Research will proceed as described in the FY 1980 budget with the following exceptions:

- The immune system research will be broadened in scope to include other aspects of host defense systems such as whole organs (lung and liver) and whole organisms.

- Screening with short-term testing using biological indicators will include end points relating to mutagenic, carcinogenic, and reproductive hazards.

- Analytical chemical procedures may incorporate development of quality assurance procedures to be used in determining human exposure levels.

FY 1981 Changes

No changes are anticipated at this time.

FY 1980 Environmental Processes and Effects Research

Transport and Fate -- The research work under the plan will focus on the development of exposure assessment models for toxic chemicals in multimedia environments, development of improved protocols to be used in testing of toxic chemicals, and technical assistance to OTS on complex problems. The following are priorities:

- Develop exposure assessment models to predict the concentration of toxic chemicals in air, water and soil/sediment environments. Incorporate single media models for the development of a multimedia exposure model.

- Investigate complex environmental transformation processes such as photolysis (in air, soil, sediments) and microbial degradation for the development of protocols for toxic chemical testing.

- Investigate complex transport processes such as leaching and partition coefficient for the development of testing protocols to be used in exposure assessment models.

- Develop model ecosystems and smog chambers for the validation of exposure assessment models and for screening of toxic chemicals.

- Characterize and select soils and sediments to be used in testing of toxic chemicals and to determine the feasibility of a soil/sediment bank.

- Validate and develop a representative chemical or benchmark concept to predict the behavior of toxic chemicals in the environment.

Ecological Effects Research -- The major emphasis of research in this area is to develop screening procedures and protocols for testing of toxic chemical effects on living organisms in freshwater, marine and terrestrial environments. Under this plan, a major effort on the Public Health Initiative will be

initiated to develop a better understanding of the effects of exposure and develop methods to predict human exposure to environmental toxicants. Specific priorities include the following:

- Develop, refine, validate, and calibrate ecological screening procedures for defining the effects of toxic substances on organisms and ecosystems.

- Conduct round-robin testing of methods such as acute bioassay and bioconcentration tests, for assessing toxic chemicals.

- Develop predictive techniques and methods to determine levels of human exposure to environmental toxic chemicals. This will involve validation of existing exposure models and initiation of "benchmark" and structure activity concepts for predicting toxic chemical behavior. The development of exposure models will require a better understanding of transport and transformation processes, biochemical transformation into the food chain, validation of exposure models into laboratory model ecosystems and microcosms. These models will be used in the screening of toxic chemicals.

- Delineate evaluative methods to determine human exposure to toxic chemicals at environmental levels to validate exposure models. The work will involve monitoring and field surveys.

- Develop the data base on human exposure. The work will include the evaluation and analysis of the exposure data currently available at the Federal and State level.

- Initiate experiments on photosynthesis reactions of field crops to UV-B.

Characterization and Measurement Methods Development -- The main thrust of the research plan under this program is to develop improved methods for the characterization and quantification of toxic chemicals in air, water, soils and sediments. Such methods

are needed in determining exposure to toxic chemicals, monitoring toxics and carrying out transport, fate and effects studies on toxic substances in the environment. Furthermore, TSCA requires regulation of large numbers of chemicals. For many chemicals, especially new chemicals, adequate methods for characterization do not exist. The specific priorities are as follows:

- Develop improved methods for the characterization of toxic chemicals in air using such methods as resins, high pressure liquid chromatography and mass-spectrometry.

- Develop improved collection devices for toxic chemicals to be used in determining exposure concentrations of toxics in air.

- Develop methods for separation and characterization of toxic chemicals in soil/sediments. Although soil/sediments represent a major sink for toxics, the current state of the art for measuring and identifying toxics in soil/sediments are extremely limited.

FY 1981 Environmental Processes and Effects

Transport and Fate -- The research plan for FY 1981 will involve the continuation of the work identified for FY 1980 with the following modifications:

- Acceleration of work on methods development for exposure assessment of toxic chemicals in multimedia environments.

- Initiation of work on transport and transformation of chemicals in marine and terrestrial environments.

Ecological Effects -- The research plan for FY 1981 will involve the continuation of the work identified for FY 1980 with the following modifications:

- Termination of the work on development of acute bioassay testing methods for use in evaluating toxic chemicals.

- Initiation of chronic effects testing for toxic chemicals on organisms and the aquatic ecosystem.

Characterization and Measurement Methods Development -- The research plan for FY 1981 will involve the continuation of the work identified for FY 1980 with the following modifications:

- Expansion and acceleration of work on the development of methods for characterization and quantification of toxic chemicals in soil/sediment environments.

FY 1980 Measurement and Monitoring Research -- The measurement and monitoring research will focus on the areas of biological laboratory quality assurance and technical support related to data collection capabilities. The priorities include:

- Develop reference and quality control materials, and prepare technical guidelines pertaining to methodology and biological laboratory testing.

- Develop a laboratory intercomparison studies program and evaluate laboratories and laboratory procedures.

- Develop a training program comprising quality assurance procedures and methodologies.

- Determine the nature and extent of toxic emissions to the atmosphere through fenceline monitoring studies around chemical complexes.

- Provide aerial sampling, photography and interpretation to identify and assess the nature, extent and source of toxics in the environment resulting from the manufacture, processing and disposal of toxic substances.

FY 1981 Measurement and Monitoring -- In FY 1981 this program will focus on quality assurance for biological testing which will be sufficiently developed to stock and operate a repository of biological testing and reference materials. This

will allow interlaboratory testing of biological testing protocols to be conducted on a routine basis. It will facilitate conducting evaluations on a routine basis. It will also permit an assessment of the proficiency of analyses and the performance of technicians conducting biological tests. Technical assistance support will be maintained in essentially the same areas as were identified in FY 1980.

FY 1980 Changes -- The FY 1980 plan for quality assurance of biological laboratory testing is a new start. A small program has been in existence which demonstrated the feasibility of *in vivo* incorporation of inorganic toxics into plant tissues which could be used as biological testing reference materials. This initial program indicates the probability of the success of the development of organic toxic materials into tissue samples is good. No changes are anticipated in the technical support program to provide data collection capabilities in the area of toxics monitoring.

FY 1981 Changes -- No changes are anticipated.

FY 1980 Control Technology Research -- In FY 1980 emphasis will be placed on expansion of the regulatory data base, specifically the development and expansion of the predictive model for chemical manufacturing. The plan includes the following priorities:

- Use process expertise in the manufacture of existing chemicals to provide and predict information on the occurrence of toxics as contaminants in intermediates, by-products, products and wastes.

- Develop marketing and use information to provide a basis for identifying substitute chemicals and alternative process routes including recovery reuse and recycling of toxic wastes.

- Develop a predictive model for new chemical manufacture to identify anticipated processes and expected releases of toxics.

FY 1981 Control Technology Research -- This program which originated in FY 1978 and is approaching critical mass in FY 1980, will be expanded in FY 1981. The

major emphasis will be to support manufacturing regulations development as well as control of existing chemicals, emergency response techniques and assistance to the regions. The predictive model for new chemical manufacture to identify anticipated processes and expected releases of toxics will also be expanded.

Alternatives -- An alternative to the planned method of operation (a balance between in-house and extramural) is an all extramural effort. This was rejected because:

- EPA has now established expertise in terms of both facilities and highly specialized interdisciplinary personnel.
- Additional cost of extramural work.

PESTICIDES RESEARCH GUIDANCE

PESTICIDES

MEDIA OVERVIEW

Planning Assumptions

The Federal Pesticide Act of 1978, which amended the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), will make the regulation of pesticides more efficient, more effective, and more timely. All registration (section 3) guidelines will be completed and in force by the second quarter of FY 80 and new regulations, where appropriate, will be in effect at this time and fully enforceable. The following assumptions reflect the new directions and resumed activities that those amendments have made possible.

Studies required by the FIFRA as amended on methods of pesticide applications and minor use pesticides will be completed the third quarter of FY 79, but at this time, we do not anticipate the results to cause any major realigning of OPP's regulatory activities. Efforts to refine and improve the Agency's tolerance-setting mechanisms will continue through FY 80 and FY 81; no radical departures affecting Agency or registrant resources are anticipated. Legal challenges to the trade secrets and data compensation provisions in the 1978 FIFRA amendments are anticipated. OPP and the Office of General Counsel expect these to be resolved in EPA's favor.

The Generic Standard development process will be fully productive by the beginning of FY 80. RPAR will be merged into the generic standards in FY 81 when the original RPAR commitment to 65 chemicals has been completed.

Until pesticide generic standards are developed, EPA will be granting conditional registrations. Conditional registrations will allow the Agency to process applications for registration of new products which are like one already registered. Ultimately, OPP will review all products comprehensively when they are reregistered under generic pesticide registration standards.

"Me-too" products and new uses of "old" chemicals will be eligible for conditional registration if EPA determines that enough information is available to evaluate unique hazards that may be posed by the new uses. The Agency will also issue conditional registration of new chemicals in the public interest if risk during the period required to complete and submit additional studies is not unreasonable.

States will have broader authority and responsibility for registering Section 24(c) "Special Local Needs" pesticides without requiring EPA's approval. Regions will assist States in establishing their 24(c) programs and will provide early guidance and screening to States on individual 24(c) applications. Final review/disapproval will remain a headquarter's function.

EPA will use broad discretion granted by the 1978 amendments to waive the submission of efficacy data. OPP will evaluate this during 1980 and, if it does not prove to be effective, will reconsider this approach. In any case, the Agency will continue to consider efficacy when performance of the product bears upon public health.

In FY 1980 EPA will complete (except for updating) the process of classifying uses by regulation, apart from the registration process. This will help to realize the objectives of the applicator certification program with regards to restricted use products.

The effort to develop grants-in-aid with States and Territories for enforcement will be continued. By the end of FY 1980, 43 States will have cooperative grants-in-aid, and by FY 1981 the number of grants will increase to 50.

The Office of Enforcement will initiate a new program (Investigations of Nationally Targeted Pesticides Public Health Incidents) during FY 1979 to focus upon all aspects of the manufacture, distribution, use, and disposal of certain restricted use pesticides. This effort will be given continued empahsis in FY 1980.

By the end of FY 1980, it is expected that all, or almost all, Federal facilities which are major sources will be in compliance and most minor source Federal facilities as well. Regions should see to it that all Federal facilities do indeed come into compliance as soon as possible, and no later than the end of FY 1980.

Research and Development will be integrated into supporting pesticide activities in 1980. Furthermore, ORD will receive its planning priorities from the Pesticide Research Committee and specific requirements from OPP.

The Federal Certification program in Colorado and Nebraska will continue at least through FY 1981.

OPP will be staffed up to budgeted levels with qualified professional and support personnel. Both Regional RPAR and Special Registration Decision Units are eliminated commencing in 1980.

Priorities

FY 80 priorities will emphasize the completion of the remaining RPAR reviews, completion of registration standards initiated in FY 79 and reregistration of existing pesticides based on these registration standards, registration of new environmentally protective pesticide products for which complete hazard data are submitted, expanded enforcement involvement on the part of the States, and increased response to emergency situations which involve substantial threats to public health and safety.

FY 1981 priorities for the pesticide program will be similar to those for FY 1980. RPAR will be substantially completed and integrated into the registration standards process. Highest priority will be registration of new environmentally protective pesticide products. Continued completion of registration standards and reregistration of existing pesticides based on them will also be emphasized. Cooperative enforcement grants-in-aid are expected to be developed in all or most States by the end of FY 1981.

In those States which have Federal certification programs, enforcement activities will be in support of efforts directed toward developing approved plans.

Federal personnel will continue to be responsible for enforcement of applicator certification in Colorado and Nebraska.

Major Objectives

In FY 80 the Agency plans to review benefits and risks of 12-17 RPAR compounds identified as posing potentially unreasonable adverse effects and reach 15-20 final risk/benefit determinations on RPAR compounds; implement the conditional registration program; give registration priority to new chemicals for which complete hazard data are submitted; reregister 1,000-1,400 products from available generic standards; complete the generic standards initiated last year and initiate the preparation of 40-50 generic standards, including the reassessment of associated tolerances.

Major objectives, reflective of the special registration program, will be for Regions and Headquarters to provide timely and responsive guidance to the States relative to their Section 5(f) experimental use permits and review 180-240 Section 5 registrations in a median turnaround time of 120 days; review 1,000-1,500 Section 24(c) special local needs registrations and conduct overview activities on their final actions; review 170-220 Section 18 emergency exemptions in a median turnaround time of 4 weeks including full scientific review of pertinent data.

Guidelines for biological pesticides will be promulgated. The Agency will establish 80-120 pesticide residue tolerances and review 75-100 amendments for food and animal feed crops after review of data and risk/benefit analyses in a median turnaround time of 105 days.

The laboratory audit program will be continued; 50-70 laboratories will be audited.

FOI requests will be given an initial response within 10 days followed by a final response as quickly as possible. Monitoring for hazard prediction and significance of potential problems will continue, but will be more closely tuned to support the regulatory process.

The abatement and control objectives for 1981 remain the same as for 1980 except that the RPAR process will be integrated into the generic standards process and increased empahsis will be given to registration of innovative, environmentally protective compounds.

The Federal Enforcement role will continue to be one of oversight, guidance, an support of non-Federal enforcement effects in States and Territories. The program will also focus upon all aspects of the manufacture, distribution, use, and disposal of certain restricted use pesticides.

During the next two years, four major objectives will be driving the Environmental Protection Agency's research and development program. These are (1) continuing the integration of the Office of Research and Development into the mainstream of the pesticide activities by supporting the Pesticide Research Committee that was jointly developed by ORD, OPP, Office of Enforcement and regional representation, (2) enhancing the Office's capability to improve the scientific and technological data for use in future regulatory and enforcement actions, (3) improving that data through scientific peer review of research procedures and results, quality control of risk assessments, and quality assurance of monitoring data, and (4) providing specific data in response to OPP's immediate needs.

PESTICIDES

Research and Development

Plans and Emphases

The Office of Research and Development will intensify efforts to develop protocols for obtaining a scientifically sound, legally defensible pesticide data base, to provide specific data requested by OPP, and to assist in assessing the data in relation to pesticide regulatory actions required by the Agency. Special emphasis will be placed on a continuing integration of the Office of Research and Development into the mainstream of the Agency's pesticide activities by supporting the Pesticide Research Committee that was jointly developed by ORD, OPP, Office of Enforcement and Regional Representation. ORD's planning and reporting system will be synchoronized with the plans of the REsearch Committee and the Agency's ZBB process. Certain laboratory reporting relationships will be realigned; this realignment will enhance human health research and integrate the environmental transport, fate, and effects research pertaining to pesticides.

The increased integration of ORD efforts into the regulatory mainstream will result in an increase of data and methods to support OPP's regulatory needs. In looking at health effects, ORD will conduct exposure estimates on priority compounds identified by the RPAR and generic standards process. Similarity, ORD will conduct research into ecological effects in response to near-term regulatory needs. This will include data assessments, toxicological tests and transport and fate tests for RPAR compounds. In addition, ORD will develop the quality level of analytical measurement data, expressed in terms of precision and accuracy, to support OPP regulatory decisions.

Additional activities include efforts to build into our scientific and technological activities appropriate review mechanisms, including enhanced peer review for individual research projects and systemic programmatic review for pesticide research activities. ORD will require, to a greater extent than in the past, quality assurance practices for all environmental quality monitoring and analytical activities.

Research activities will follow as closely as possible the strategy and needs developed by the Pesticide Research Committee and be responsive to the specific OPP needs. The Commitee contemplated research required by OPP, OE, and the Regions to fill knowledge and data-gaps, to develop scientific techniques for obtaining these data, and to respond to future needs that are more appropriately anticipatory in nature. Research needs were discussed under three major topics; populations at risk, exposure assessment, and adverse effects. Also included were research needs for quality assurance, integrated pest management and technical support. The Committee agreed that exposure assessment should receive special attention in FY 80 and 81.

The Integrated Pest Management (IPM) program will develop systems for use with chemical pesticides to provide a necessary alternative for the pesticide registration process. Primary emphases will be directed to major crop ecosystems (corn, cotton, soybeans, alfalfa, and apples) and urban pests. Technology transfer activities will continue in order to educate the use community.

The registered uses of a pesticide determine the population group at risk. As increased amount of exposure data for different pesticides become available, it will be possible to make accurate and meaningful identifications of overall populations risk. Within these populations, attempts will be made to pick out subgroups of persons at relatively high risk of developing illness from pesticide exposure. Extrapolation from teratology and reproduction studies in experimental animals will help to define those compounds that may pose a risk to pregnant women as well as to the fetus and the newborn child. Other research will study susceptibility to pesticides of animal given suboptional diets.

Interest in the population at risk also includes pesticide exposed populations that may have incurred vulnerability to other hazards. New studies to survey this problem will include evaluation of the immunologic competency of animals exposed to various pesticides and capability of pesticide exposed animals to withstand bacterial and viral challenge. FY 79 and

earlier research activities in pesticide exposure studies have produced guidelines for general use by registrants in measuring exposure of workers to pesticides. Emphasis in 1980 and 1981 will be on developing and validating procedures useful in measuring environmental exposure to pesticides, particularly exposure of nearby residents to drift from agricultural application. Also, research will be begun to evaluate generic models for compounds and application methodology in estimating human occupational and environmental exposure to replace study of individual situations.

In-house and extramural studies will produce the requisite scientific understanding, laboratory measurement techniques, and mathematical descriptions of the interactions of pesticide chemicals with air, water, and soil and the actions of organisms on the chemicals. This information will then be developed into test protocols that incorporate necessary quality control provisions and decision-making tools to evaluate the environmental transport, transformation and distribution of pesticides. Specifically, research on environmental exposure will include determination of transport processes in water, sediment of soil and biota in terrestrial and aquatic environments.

There will be a close coordination between exposure research and effects to define the degree of hazard or extent of safety of current pesticide exposures for both occupationally and environmentally exposed populations. For many pesticides, by-products, metabolites and biotransformation products, exposure methodology is now sensitive to levels below those known to have toxic effects on man and the environment. Effects research will be carried out to continue to assure the safety of ambient levels of pesticides or to detect any hazardous levels that exist. Biological-type pesticides are a special problem and will be given special attention.

In addition to the usual research on effects of specific pesticides on aquatic and terrestrial organisms, ORD will develop the capability to

conduct subacute avian toxicity tests on a limited scale. These tests will yield information unattainable from other Federal agencies.

Quality assurance, including both internal quality control and external quality assurance, will be made an integral part of every protocol. Current procedures in analytical and biochemical projects provide for such procedures, but quality assurance can and will be improved. Additional efforts will be made to ensure that in-house and extramural pesticide laboratories are routinely involved in quality assurance programs for chemical analysis.

In a closely related area, ORD will work closely with OPP and OE to develop protocols for "good laboratory practices" and will become involved in transferring this information to Regional Inspectors and others as necessary.

Changes

Other than items addressed in the "Plans and emphases" section, there are no major changes anticipated in R & D activities.

Alternatives

Research activities are now conducted through a mixture of in-house and extramural activity. Alternatives to this approach include accomplishing research activity through grant and contracts only or through in-house activity only.

Grant and contract work permits exclusive control over planning and implementation of desired research but often requires even longer lead-times than now required. This approach does not furnish the agency with required data analysis and necessary expert testimony at regulatory hearings.

The office of Research and Development is not able to maintain under present resource allocations, the necessary skills mix or expertise to

address the entire scope of scientific questions that arise within the Agency. Also, it is scientifically advisable to maintain close contact with academic and private sectors.

Therefore, a research operation which is either exclusively in-house or conducted through grants and contracts is not feasible.

RADIATION RESEARCH GUIDANCE

RADIATION

MEDIA OVERVIEW

The Environmental Protection Agency is responsible for protecting the public and the environment from the adverse effects of unnecessary radiation. Recent Congressional and Executive mandates have directed EPA to focus on the following specific radiation sources and pathways:

- The Resource Conservation and Recovery Act (RCRA) and the Uranium Mill Tailings Radiation Control Act (UMTRCA) charge EPA with providing standards for protection from waste materials with radioactive content.

- The Interagency Review Group on Nuclear Waste Management (IRG) identifies EPA as the standard setter for the various classes of waste in its Report to the President.

- The Clean Air Act Amendments of 1977 require EPA to protect public health and the environment from harmful radioactive airborn effluents.

These specific authorities dictate the major emphases which EPA's radiation program will pursue in FY 1980-81.

Planning Assumptions

FY 1980 -- The Radiation Guidance assumes the passage of no new legislation, but does assume endorsement by the President of the agency roles and work schedules proposed in the IRG Report. In addition, Guidance assumes that:

- EPA will promulgate the standard for disposal of high-level radioactive waste in FY 1980.

- The Agency will complete its cancer policy.

- No major changes in Federal energy policy will be made.

- No major natural or man-made event will occur or be discovered to require immediate EPA action to prevent or mitigate serious acute population exposure to radiation. If such an event does occur, EPA will provide required support by diverting efforts from lower priority projects.

- The Office of Radiation Programs will determine sources or substances requiring control under the Clean Air Act Amendments of 1977 by the beginning of FY 1980.

FY 1981 -- The following additional assumptions apply to FY 1981:

- EPA will promulgate standards for three major source categories under CAA. Attention can then focus on other sources.

- EPA will issue the standard for inactive uranium mill tailings.

- EPA, other Federal agencies, and the Congress will agree on EPA's role in developing Federal Radiation Guidance.

Media Priorities

Two priorities are proposed for FY 1980: developing standards for radioactive wastes and airborne radioactive emissions; and establishing organizational roles and procedures to enforce these standards. In FY 1981, the Radiation Program will continue to emphasize standards activities, while implementing an effective standards enforcement program.

Media Objectives

In FY 1980, ORP will give top priority to developing standards for inactive uranium mill tailings, with immediate transfer of that effort to developing standards for active uranium mill tailings as it becomes possible to do so. The Interagency Review Group schedules will serve as a guide to planning the EPA program for developing standards for transuranics waste (TRU), land and sea disposal of low-level wastes, and the decommissioning and

decontamination of nuclear facilities. Work will progress in all of those areas with resource commitments generally in the amounts specified in the IRG Subgroup II Report on Involvement. ORP will pursue these efforts through both FY 1980 and 1981, on the assumption that this level of effort will continue until the recommended IRG schedules are completed.

To the extent possible, the Radiation Program will support international efforts to harmonize radiation protection policies for environmentally sound nuclear activities.

Of equal importance are continued efforts to implement the Clean Air Act. ORP will issue the first standards for CAA radioactive effluents in FY 1980, and the Office of Enforcement will begin planning for enforcement of these standards.

EPA will continue to perform its Federal Guidance functions as prescribed by the Atomic Energy Act. Both ORP and ORD will continue to study the prevalence of and health effects caused by nonionizing radiation. The degree to which this role is pursued is the subject of a separate paper for the Administrator's Analytical Agenda. Precisely how EPA exercises this authority will affect ORP's resource requirements.

ORP will give second priority to operating the Environmental Radiation Ambient Monitoring System (ERAMS), and identifying potential hazards through a limited program of special studies and assessment of emerging technology. Headquarters and Regional personnel will review significant Federal actions as required under the National Environmental Policy Act (NEPA).

ORP will limit technical assistance to States to localized problems which have wider ranging significance and can be accommodated in the work schedules for higher priority efforts. These priorities may change, however, if specific situations are found to pose significant hazards.

RADIATION

Research and Development

Plans and Emphases

- o Nonionizing Radiation (NIR)

  - FY 1980 -- Experimental animal research on the teratologic, mutagenic, immunologic, behavioral, and neurophysiologic effects of low power density, chronic exposure to frequencies of environmental significance. Investigations of the mechanisms of interaction of NIR with biological systems using microwave spectroscopy, experimental studies of effects of NIR and amplitude-modulated NIR on membranes and isolated systems. Initiate pilot epidemiological studies of selected populations. Begin to develop a competence in thermoregulatory physiology and the dosimetry of partial body resonance.

  - FY 1981 -- Thermal physiology research to determine the biological correlates of localized heating in animals; investigations of the interspecies comparisons of thermoregulatory systems; computer modeling of human thermoregulatory systems. Conduct experimental and theoretical studies of the interaction of NIR with biological membranes, directed towards mechanisms of interaction. Investigate amplitude-modulated NIR phenomena in whole animal systems. If warranted, conduct full-scale retrospective epidemiologic studies and initiate pilot prospective studies.

- Ionizing Radiation

  - FY 1980 -- The ORD reimbursable program provides comprehensive off-site support to the Department of Energy programs at the Nevada Test Site (NTS) and other sites. This support will include mobile and aerial radiological surveillance of each nuclear test and radiation monitoring of groundwater, animals, and other types of samples in and around NTS. A new emphasis for FY 1980 will be in the development of exposure and dose estimates for the population in the vicinity of NTS as a result of all previous nuclear tests. The quality assurance program provides radioactive reference standards and samples, the development of quality control guides, and on-site inspection and interlaboratory tests to determine the capability and performance of measurement systems and operations.

  - FY 1981 -- The Agency will consider initiating a program of research for ionizing radiation.

Changes Anticipated

- Nonionizing Radiation (NIR)

  - FY 1980 -- An ORD Public Health Initiative in FY 1980 will provide $2.0 million and 3 man-years to expand research on the mechanisms of interaction, to develop exposure systems for long-term experimental animal studies, to begin epidemiological studies, and increase our knowledge of the ambient radiofrequency environment.

  - FY 1981 -- None anticipated.

- o Ionizing Radiation

  - FY 1980 -- Over the past two years the Off-site Program has been extensively reviewed up through OMB. The present program is the minimum satisfactory product resulting from these reviews. No further changes are anticipated in this or the quality assurance program.

  - FY 1981 -- The Agency anticipates no changes at this time. An Analytic Agenda Issue will consider a research program for ionizing radiation. The Agency will also review again how the Off-site Program should be operated.

Alternatives

- o Nonionizing Radiation (NIR)

  Elimination of this R&D program either outright or through contracting out *in toto* would likely cost the Agency its expertise in nonionizing radiation health effects, an area of growing public concern.

- o Ionizing Radiation

  There are three alternatives for the operation of the Off-site Program. The first is that ORD continue to operate the program in its present mode. The second alternative is for EPA to discontinue support to DOE's testing program. These two alternatives have been widely discussed previously, and they will necessarily be treated in the ranking process of Radiation Decision Units. The third alternative is for EPA to accept full responsibility for design, operation, and funding of the Off-site Program.

  The Agency has not conducted a research program for ionizing radiation since 1976. An Analytic Agenda Issue will examine the alternative of starting such a research program again.

ENERGY RESEARCH GUIDANCE

ENERGY RESEARCH GUIDANCE

OVERVIEW

The Energy/Environment research and development program was initiated in FY 75 following the recommendations of two OMB/CEQ task forces -- one on pollution control technology and the other on the environmental processes and effects of energy pollutants. These recommendations were based on a desire to develop needed control technology and health and effects data necessary to help avoid an irreconcilable conflict between energy supply and environmental protection interests. Such a conflict seemed likely since it appeared that the nation would necessarily be relying more heavily on the "dirtier" fuels such as coal and oil shale and less on the cleaner domestic gaseous and liquid fuels. This trend has been accelerated by our national energy policy, which although only slowly evolving, calls for a widespread conversion of utility and industrial power facilities from scarce oil and gas to plentiful coal, decreased fuel consumption, and in the longer term, the use of technologies that are only now beginning to emerge for the production of liquid and gaseous fuels from coal and oil shale.

Projections indicate that total U.S. coal mining activities will increase from today's annual production of 700 million tons to nearly 1 billion tons by 1985 and will more than double by the year 2000. In 2000, conversion of existing utility and industrial facilities from oil and gas to coal coupled with construction of new conventional and advanced coal utilization facilities will consume approximately 1.4 billion tons of coal annually. Although conventional combustion of coal will predominate, by the year 2000 emerging coal-based technologies are projected to consume 300 million tons of coal per year.

These shifts in energy development and use pose potential significant threats to human health in the next two decades. Massive increases in coal and oil shale mining, off-shore oil and gas prodution, and uranium extraction are all projected by the year 2000. Intensified mining activity will create erosion problems and generate runoff which can contaminate surface waters. Aquifers may also be polluted as a result of leachate or drainage from the mines themselves, or from the improper disposal of mining wastes. Increased use of coal by utilities, industries, and new technologies will produce more air pollution and solid waste residue than are currently produced. The pollutants expected to increase are nitrogen and sulfur oxides, ashes, and sludges. Because of the way they are formed, pollutants emitted from new technologies can be varied and complex and may prove to be even more harmful to human health than those emitted from current technologies.

To address the environmental threat associated with energy and industrial pollution EPA's enabling legislation has been toughened with the aim of tightening effluent and emission limitations. The Clean Air Amendments of 1977, the Resource Conservation Recovery Act and the Federal Water Pollution Control Act Amendments will require improved control of emissions, effluents and solid residuals.

The trend toward increased reliance on coal and other potentially damaging fuels and technologies can only occur without massive environmental impact if the necessary data base is available to quantify effects and if affordable control technology can be applied in a timeframe consistent with technology utilization.

The following discusses major priorities of the FY 80-81 program in the control technology and effects programs.

CONTROL TECHNOLOGY

EPA's energy control technology program has the overall goal of providing information of the types and quantities of pollutants released by current and emerging energy supply activities and where necessary, to develop control options. The following delineates major research priorities in the FY 80-81 timeframe for the six control technology subprograms: flue gas sulfur control, nitrogen oxide control, particulate control, environmental impacts of conventional and advanced energy systems, fuel extraction and fuel processing.

Flue Gas Sulfur Control

This program includes sulfur oxide pollution control research and development relating to electric utility and industrial power generation. Technology improvement is important since EPA regulations are expected to require from $2-4 billion in annual expenditures on relatively immature SO_x removal technology in the 1990's. Major efforts are directed towards flue gas desulfurization (FGD) technology development and assessment; assessment of the capital and operating costs of FGD systems; research and development directed towards increasing FGD system reliability, reducing sulfur oxide emission levels and reducing capital and operating costs. Special attention should be paid on transferring information to the public sector.

- Research Priorities (Air)

  1. Continue to issue quarterly updates of the performance and status of existing FGD systems for new FGD installations in the U.S., Japan and Europe. Also continue technology transfer program via symposia, data books and seminars.

  2. Document the full scale evaluation of the adipic acid modified limestone FGD process evaluation. Special attention will be given to the economic impacts of this process modification and any secondary operational or environmental factors. Preliminary testing indicates such an approach offers potential of greater than 95% SO_x control capability at costs lower than current technology.

  3. Complete the duel alkali evaluation program at Louisville Gas and Electric. The final report will provide an evaluation of performance and economic factors; this technology offers potential for cost and reliability advantages over commercial lime and limestone FGD systems.

  4. Complete the preliminary evaluation of dry sulfur oxide control processes. Such processes offer the promise of low cost energy-efficient alternatives to commercial FGD systems, particularly for low to moderate sulfur coals.

Nitrogen Oxide Control

This program includes research and development relating to nitrogen oxide control from electric utility boilers, industrial boilers, process furnaces, and other stationary sources. Successful conduct of such a program is important since NO_x emissions from stationary sources are projected to increase at an alarming rate over the next two decades. This is primarily due to the projected increased combustion of coal and the current absence of cost effective NO_x control technology.

- Research Priorities (Air)

  1. Document the status of NO_x control for utility and industrial boilers to support the 1982/1983 review of the Standard of Performance for NO_x, as required by the Clean Air Act Amendments of 1977.

2. Demonstrate the low NO_x coal burner on two industrial boilers and a utility boiler. The program goal is an emission rate of 0.2 pounds of NO_x per million BTU in a timeframe compatible with possible revised NSPS in the 1982/1983 timeframe.

3. Evaluate dry NO_x control technology for Stationary, high efficiency gas turbines to support the Congressionally-mandated review of the New Source Performance Standard for Gas Turbines.

4. Demonstrate combustion modification concepts to simultaneously reduce NO_x and particulate emissions from stationary internal combustion engines.

5. Conduct assessment and applications testing of combustion modification technology for stoker coal-fired commercial and industrial boilers.

6. Continue bench-scale research and assistance to California on the technical and economic factors relating to flue gas treatment for NO_x and simultaneous NO_x/SO_x control. Such processes offer the potential of greater than 90% NO_x control albeit at substantial costs.

Particulate Control

The overall objective is to assess, improve and develop technological methods for the control of all forms of man-made (and induced) particulate matter; especially those controls effective at minimizing emissions of inhalable size particulates.

o Research Priorities (Air)

1. Characterize inhalable particulate matter emissions from important energy and industrial sources. Such information will be required to allow selection of the appropriate control technology to achieve a possible ambient inhalable particulate matter (fine) particulate standard. Such a revised ambient standard is under active evaluation by EPA.

2. Evaluate the sources and controls for urban fugitive dusts. Such sources are major contributors to total suspended particulates in certain urban locations.

3. Review the industrial and utility boiler particulate control technology adequacy in order to help the Air Program Office evaluate the appropriateness of revising the NSPS in 1982/1983 timeframe.

4. Complete evaluation of a full scale baghouse on low sulfur coal utility boilers, and continue assessment of electrostatic enhancement of fabric filtration for baghouse applications. Baghouses represent the most cost-effective control alternative for stringent particulate emission limitations particularly for low sulfur coal applications where ESPs are costly.

5. Complete the initial evaluation of after-treatment particulate trapping devices for mobile source diesel emission control, and assess the prospect of their use to support an emission standard for autos and trucks.

6. Continue assessment and development of flue gas conditioning additives and the engineering evaluation of a 30,000 SCFM electrostatic precipitator (ESP) precharger for enhanced particulate control. Subsequently, perform evaluation of control enhancement options for low sulfur coal boilers with low performance ESPs.

7. Continue evaluation of optimized (SO_x-Particulates) mini-plant wet scrubber with the objective of achieving the proposed 1979 Utility NSPS for particulates and SO_x with a single low-cost control device.

Environmental Impact of Conventional and Advanced Energy Systems

The program includes the following four subprograms:

- Conventional combustion environmental assessments; define environmental impacts of unregulated pollutants from utility, industrial, commercial and residential sources.

- Waste and water: define the impact and where required evaluate/develop controls for the solid waste and water residuals associated with coal and oil combustion sources.

- Conservation and advanced energy systems: environmentally assess wastes-as-fuel, geothermal, solar and other emerging non-fossil fuel energy systems.

- Integrated technology assessments: identify environmentally, socially and economically acceptable alternatives for meeting national energy objectives.

- Research Priorities

  - Air

    1. Define the environmental impact of POMs, heavy metals and direct sulfate emissions from selected coal and oil combustion sources.

    2. Complete combustion source chemical and bioassay studies for utility and industrial coal and oil sources, aimed at comprehensive screening for unregulated air pollutants.

    3. Define the environmental impact of increased wood burning in industrial, commercial and residential sources.

    4. Define the air impact and evaluate control of commercial and near-commercial waste (municipal refuse) - as-fuel systems.

    5. Define air impact and evaluate controls for geothermal energy systems.

  - Water

    1. Continue regulatory support efforts to provide characterization data and control technology information for the promulgation and implementation of effluent guidelines for the electric utility industry.

2. Complete comprehensive combustion source chemical and bioassay studies for utility and industrial coal and oil sources aimed at comprehensive screening for water pollutants.

3. Continue limited assessment and control technology evaluation for waste-as-fuel and geothermal water pollution problems.

- Solid Waste

1. Complete regulatory support program to obtain sufficient data and information to enable promulgation of guidelines or regulations under RCRA for the storage, treatment and disposal of coal ash and scrubber waste from coal-fired electric generators.

2. Evaluate second generation ash and scrubber waste disposal approaches with the aim of identifying more affordable and effective techniques.

- Multi-Media

1. Perform congressional-mandated analysis of the Federal energy/environmental and conservation programs; present annual findings to the Congress.

2. Extend coal technology, electric utility, coal development and oil shale development, integrated technology assessments (ITAs) to evaluate impacts of energy conversion technologies and development strategies on residuals disposal, toxic and trace elements levels and water use.

3. Extend the regional ITA of the Ohio River Basin and Appalachia to identify energy-development policy options for local, state and regional governments.

Fuel Processing, Preparation and Advanced Combustion

The program includes the characterization of effluents and emissions, assessment of related environmental impacts, and development and evaluation of necessary pollution control technology for various emerging coal, oil shale and biomass fuel processes. The results of this effort are used as input on the Agency's standard setting process. Fuel processes assessed include: (1) coal cleaning, (2) fluidized bed combustion, and (3) synthetic fuels generation from coal, biomass and oil shale.

- Research Priorities (Multi-Media)

  1. Continue improving methods for sampling, analysis and continuous monitoring of air, water and solid waste effluents/residuals to quantify total organics, characterize toxics and determine inorganic compounds for coal processing technologies.

  2. Update multi-media pollution control guidance document and environmental assessment report (EAR) for first generation above ground and in-situ oil shale processes.

  3. Prepare multi-media pollution control guidance document and environmental assessment reports for low/high BTU coal gasification, coal liquefaction and fluidized bed combustion processes.

  4. Evaluate air, water and solid waste environmental problems and controls for coal preparation (cleaning) plants.

  5. Evaluate environmental problems and controls for first generation biomass energy systems.

Extraction

The general objective of the extraction research program is to assess, develop, identify, and verify control technology for solid fuel, oil and gas extraction which will assure that the recovery of the nation's fuel reserves is conducted in an environmentally acceptable manner. To this end, equipment, methods, and technology are assessed and developed to prevent, control, and abate the discharge of environmental pollutants from both point and non-point sources. Pollution sources include facilities for exploration, production, storage, and transportation of coal, uranium, oil shale, oil, and gas. Both normal operations and accidental spills are examined.

- Research Priorities

  - Air

    1. Characterize fugitive particulates by size and chemical composition in extractive processes.

    2. Relate ambient particulates to sources.

    3. Conduct fate and effect studies related for extractive processes.

    4. Evaluate fugitive process particulate controls.

    5. Evaluate the role of natural hydrocarbons on O_3 and aerosol problems.

  - Water

    1. Evaluate the effects of Western coal and oil shale extraction on surface and groundwater quality.

    2. Develop water quality monitoring network in Western energy development areas.

    3. Determine the best management practices for surface mine sediment control.

    4. Develop techniques for removal of toxic materials from mine drainage.

    5. Identify the best available technology for the treatability of effluents.

  - Solid Waste

    1. Determine adverse effects of solid waste from mining.

    2. Determine the best management practices for solid waste from mining.

    3. Assess methods for mining waste reduction, recovery and reuse.

HEALTH EFFECTS

The major thrust of the second five year effort should be to respond to specific EPA and other agency research requirements. This trust will strengthen the utility and effectiveness of the program. The second five year effort should be closely coordinated with the base research programs both in EPA and the other agencies.

During the course of the Interagency Steering Committee Meetings helping to plan the FY 80-85 program, the non-EPA members have voiced concern that appropriate sensitivity to the interagency character of the program be recognized during EPA's ZBB process. They remind us of their feelings that EPA's ZBB process may not adequately reflect the priorities and needs of other agencies participating in the program. The research program should be sensitive to these concerns.

The following are the research objectives of the programs identified by the four major subdivisions: Ecological Fate and Effects, Air Transport and Fate, Monitoring and Instrumentation, and Health Effects.

Ecological Fate and Effects - Research Priorities

Toxics

1. Development and validation of quick and economical methodologies to test the biological effects of toxic energy-related chemicals in support of TOSCA's requirements to regulate hazardous chemical substances and mixtures.

Air

1. Evaluate the effects of energy-related air pollutants on aquatic and terrestrial ecosystems and their components in support of the Clean Air Act requirements to prevent the significant deterioration of air quality and the development of national ambient air quality standards.

Water

1. Identify techniques to prevent adverse environmental effects from coal mining operations in support of the permanent regulation of the Office of Surface Mining (DOI) and the development of best management practices in support of EPA's national water standards for the coal mining industry.

2. Assess the impact of energy-related consent decree pollutants on various ecosystems in support of EPA's development of the water quality criteria documents.

3. Evaluate the effects of offshore oil and gas exploration and extraction of marine environments in support of EPA's requirements pertaining to the National Pollutant Discharge Elimination System permit program.

Air Transport and Fate - Research Priorities

Air

1. Development of complex terrain air pollution dispersion models to support the Agency's efforts to establish environmental standards based on sound scientific information and to develop and evaluate abatement programs.

2. Development of regional (long-range) transport and dispersion model to support Agency efforts to understand the atmospheric transformation and impact on visibility of pollutants originating from energy sources and to develop standards and abatement strategies.

3. Fine particulates - studies to characterize their formation, transport and affect visibility. Output to support Agency fine particulate standard development.

4. Pollutant behavior studies - chemical and physical atmospheric processes, field and chamber studies. Output information for use in model development. This includes studies of scrubbed and unscrubbed plumes and of nucleation and cloud phenomena.

Monitoring and Instrumentation - Research Priorities

Toxics

1. MAS - Master Analytical Scheme. Continuation of development of this comprehensive and ultra-sensitive GC/MS system for analysis of complex organic molecules. The computerized detection module of this sytem has a library of 50,000 fingerprints of the organic species most likely

to be found in environmental samples, including many that are toxic or carcinogenic. This powerful tool will be used by the Agency in pseudo mass-balance studies to identify the major sources of particular toxic substances to assure that regulatory initiatives are realistic and effective.

Air

1. Visibility monitoring in Federal Class I areas in support of Agency efforts to implement Clean Air Act mandates for prevention of significant deterioration.

2. Acid precipitation and dry deposition monitoring in support of Agency efforts to identify the ecological and economic impacts of acid precipitation.

3. Fine Particulates - development of methodology for monitoring the organic and nitrate fractions in support of the Agency's efforts to understand atmospheric transport and transformation of these pollutants. The monitoring methodology also supports agency efforts to devise and evaluate abatement strategies.

4. Air quality baseline documentation for the western area where intense energy development activity is projected to occur by 1985 - summaries and analysis of data obtained during the first five years. This data will enable the Agency to see and prove the environmental impacts of energy developments.

Water

1. Development and implementation of a nationwide anticipatory monitoring program for toxic pollutants from energy developments (AMTES: Anticipatory Monitoring for Toxics from Energy Sources). The monitoring system will be used to devise and evaluate abatement strategies and to raise alarm flags to avert potential catastrophes.

2. Development of advanced monitoring systems and strategies for particular field applications related to new energy developments, e.g., OCS drilling platforms, in-situ retorting. These monitoring systems will support the NPDES program.

Water Supply

1. Basin studies in the western energy development areas to establish baseline hydrological and chemical groundwater data in order to predict impacts on groundwater of energy developments. Energy developments threaten both the quality and quantity of water supplies in the semi-arid regions of the West which accelerated development of vast energy resources is occurring.

Multi-Media

1. Multi-media development of monitoring and instrumentation technology for energy source monitoring and ambient monitoring for pollutants from energy sources in support of Agency enforcement activities and Agency efforts to evaluate abatement programs.

2. Multi-media development of pollutant measurement methodology in support of health effects, ecological effects and transport, transformation and fate studies of pollutants from energy sources. These studies support the Agency's efforts to establish environmental standards based on sound scientific information and to develop and evaluate workable and effective abatement strategies.

Health Effects - Research Priorities

Toxics

1. Development of techniques to identify manufactured agents/mixtures that can produce adverse effects on human health.

2. Development of a data base to assist in determining the impact on humans of specific manufactured energy-related chemicals (and mixtures) for specific biological endpoints (birth defects, cancer, mutagenic effects). These techniques/data are needed to provide EPA support to the Toxic Substances Control Act of 1976

Air

1. Development of a data base to assist EPA in establishing energy-related National Ambient Air Standards. This data base enables the development of reliable estimates of human health damage functions for various population groups through a balanced program in animal toxicology, epidemiology and clinical studies.

Water

1. Development of techniques to identify waterborne agents/mixtures that can produce adverse effects on human health.

2. Development of a data base to assist in determining the impact of humans of energy-related waterborne effluents (individual agents and mixtures) for specific biological endpoints (cancer, cardiovascular disease).

Solid Waste

1. Development of techniques for identification of energy-related hazardous wastes that can produce adverse effects on human health.

INTERDISCIPLINARY RESEARCH GUIDANCE

INTERDISCIPLINARY

MEDIA OVERVIEW

The past years have seen the development of a growing recognition that the Agency must improve its exploratory research capabilities in parallel with integrating its research and regulatory functions. Likewise, the development of the regulatory decision process has come to require that the risks, benefits and costs of EPA's regulatory decisions be documented with improved methodologies and data. In response to these developments ORD established its Anticipatory Research program as a cornerstone in the development of a long range research program and proposed the establishment of an Office of Health and Environmental Assessment. During this same period of time, operational components of the Agency have recognized that segmented state grant mechanisms did not always encourage innovative multimedia management approaches for dealing with health and environmental problems. The Agency accordingly proposed the Integrated Environmental Assistance Act of 1979 to assure that alternative ways to foster and support a total grant delivery approach. Finally, an ongoing agency activity most representative of the integrative approach needed to examine environmental problems, is the environmental impact statement. Total NEPA compliance and 309 Review activities relating to all media categories are the overview responsibility of the Office of Federal Activities.

MAJOR OBJECTIVES

- Develop an integrated exploratory research program within ORD.
- Fully implement a health and ecological assessment capability within ORD to serve program office requirements.
- Coordinate environmental training programs throughout the EPA by the National Workforce Development Staff.
- Integrate new Council on Environmental Quality regulations, Endangered Species Act regulations, Historic Preservation regulations and the Executive Orders on Floodplain Management and Wetlands Protection in all NEPA programs.

- Implement the Integrated Environmental Assistance Act emphasizing simple administration, enhanced state program integration and flexibility and incentives for good performance.

- Develop and publish a set of Environmental Profiles.

INTERDISCIPLINARY

RESEARCH AND DEVELOPMENT

Development of an Exploratory Research Capability

We have made important progress in the past year in starting the process of building an exploratory research capability. Within the Anticipatory Research Program initiation of the Center Support Program provides us with the beginning of a long term research program in critical areas to serve as a foundation for our applied research in support of regulations. It will become an increasingly important link to the best institutions in the academic community in the future. Internally, the Innovative Research Program is providing new opportunities for our own scientists to surface basic research proposals and unique ideas. Finally, more mature multidisciplinary programs aimed at assessing anticipated problems have begun to focus on areas likely to be of growing future concern.

Since these advances provide the underpinnings to our ability to ultimately get ahead of our future problems, we must be careful of their design and assure that the best scientific talent of the country participates in their development. Moreover, our efforts to identify new problems must also take advantage of the government wide resources devoted to similar undertakings in offices such as the Office of Technology Assessment, National Science Foundation and Congressional Research Service. We must articulate our research interests to the scientific community with increasing clarity and assure through greater competition that the best scientific proposals are awarded. Finally, there remains the task of assuring that exploratory research conducted within all media is integrated into a comprehensive effort. This task must focus on identifying exploratory research across all areas and assuring that those problem areas in need of fundamental research are adequately supported.

- Plans and Priorities - FY 80

  - Provide increased competition and improved peer review of EPA grant programs.

  - Implement Center Support activities initiated in FY 79 and establish four (4) new centers for long-term research.

  - Expand Innovative Research activities providing for increased ORD participation by Laboratory and extramural scientists.

  - Integrate Acid Rain and Cancer Program research programs.

o Plans and Priorities - FY 81

- Integrate long range research conducted through the Public Health Initiative, Anticipatory Research and Base Programs into exploratory research program.

Implementation of a Health and Ecological Assessment Capability

The scientific assessment program is made up of two distinct but interrelated operations: a criteria and assessment development activity; and a special assessment activity on risk and exposure. In FY-79 OHEA (Office of Health and Environmental Assessment) was proposed to institutionalize both the existing Cancer Assessment Group and Environmental Criteria and Assessment Office scientific assessment programs and the new 1979 initiatives (ECAO-CIN, Reproductive Effects Risk Assessment, Exposure Assessment). FY 1979 was a start-up year for the new programs with the ECAO-CIN developing proposed water quality criteria for the 65 Consent Decree Chemicals, the Reproductive Risk Assessment Group developing guidelines for Agency wide adoption and the Exposure Assessment Group initiating methodology development.

The entire scientific assessment program is Program Office oriented in its outputs. The needs are articulated by the others and converted into work plan priorities.

FY 1981 should see a strengthening of the Agency's capability to develop health related assessments in a uniform and consistent manner. The quality control afforded by OHEA either through the ECAO programs or the special risk groups assessment will be apparent. The capability for exposure assessments, and estimating total body burdens etc. will likely be much improved on an Agency wide basis as we approach the end of FY-80 and look into 1981. For planning purposes OHEA expects to receive more requests for assistance from the program offices in the development of assessments. Moreover, as we approach FY 1981, ORD anticipates that effects other than carcinogenic and reproductive impairment will be emerging for regulatory analysis. Pulmonary, neurological, and cardiovascular effects are likely candidate areas. The establishment of a special assessment group for these health areas appears appropriate as a final step in the development of this capability. OHEA functional statements provide for this event.

o Plans and Piorities - FY 80

- Fully implement a scientific assessment capability in the area of Carcinogenesis and Reproductive Risk Assessments.

- Fully implement a scientific assessment capability to conduct Exposure Assessments.

o Plans and Priorities - FY 80

- Expand scientific assessment capability to include pulmonary, neurological and cardiovascular effects.

WORKFORCE DEVELOPMENT ACTIVITIES

In the next two years the Office of Research and Development will take steps in four broad areas: (1) move more education, employment, and training on environmental subjects into the self-supported systems; (2) coordinate the full range of training in the Agency - including enforcement related training; (3) expand the use of workforce planning tools in Integrated Environmental Assistance and State-EPA Agreements; and (4) determine the shortages likely to occur in highly specialized environmental occupations.

o Plans and Priorities - FY 80

- Expansion of the Senior Environmental Employment Program to all 50 States by 1980.

- Establishment of a strong Co-op Education Program for State and local environmental agencies.

- Publication of a guide to extra- gency resources.

- Preparation of composite training plans across program lines, e.g., hazardous waste dumps; hazardous spills, enforcement.

- Identify with the regions non-compliance situations related to human resource deficiencies and promote with the regions education and training on topics such as I/M, hazardous waste management, land application of waste water, and waste treatment plant operations.

o Plans and Priorities - FY 81

- Continue FY 80 initiatives.