

REPORT OF THE INTEGRATED TOXICS
STRATEGY WORK GROUP

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EXECUTIVE SUMMARY

The public health and environmental hazards associated with ever-increasing production, use, and disposal of toxic chemicals have received wide national attention in recent years, resulting in enactment of the Toxic Substances Control Act. The problems posed by "toxics" (other than the traditional "criteria pollutants") are exceedingly complex, for several reasons. Scientific data on cause/effect relationships for health effects are severely inadequate, especially for chronic exposures at low levels. Most toxic pollutants are not amenable to media-specific control measures; and yet, most of the Agency's enabling legislative authorities in the past have been media-specific. Such authorities have fostered the establishment of a fractured management approach, by which advocates of partial solutions (e.g., the "water program" or the "air program") are not required to develop Agency-wide, multimedia (i.e., "integrated") responses to toxics problems. As a result, there is not enough effective information exchange and coordination between the various Headquarters and Regional offices, causing insufficient attention to some problem areas, duplication in others, and occasionally the expenditure of effort which will not solve a particular environmental problem but merely transfer it to other media. Another weakness in the current management of toxics is the absence of a system of Agency priorities. All too often the Agency's actions have been externally induced by "pollutants-of-the-month."

One of the principal conclusions reached by the Work Group is that much more than "coordination" between program offices is needed to solve the serious management problems the Agency has encountered in the toxics area. What is required is a strong, well-managed toxics integration program which will tie together EPA's currently fragmented efforts. Such an integrated approach to

Management should meet four main objectives:

1. Identify and rank toxics problems on an Agency-wide basis so that EPA is placed in a more anticipatory position.
2. Adopt a management system which integrates the Agency approach to toxics problems and which effectively coordinates EPA activities so that Agency resources are efficiently utilized and sound actions result.
3. Develop procedures that direct the efficient utilization of all EPA regulatory authorities and ensure the integration of these authorities with the Toxic Substances Control Act.
4. Develop and improve EPA's ability to make sound and consistent hazard assessments based on health and environmental data.

To attain the first objective of integration, the Work Group has conceptualized a process by which Agency-wide toxics priorities could be established. A well-defined system of priorities would result in several benefits, such as the alleviation of the current dilemma of resource allocations between competing programs and the proper focusing of key toxics control functions (such as information gathering, R&D, monitoring, and enforcement) to areas where they are most needed. The recommended priority establishment process entails the compilation of a toxics problem "threat list," through the consideration of scientific criteria, applied with subjective judgement. The threat list would then be used by the individual regulatory program offices to generate their respective "action priority lists," through the application of administrative criteria, such as the practical feasibility and cost-effectiveness of control of each pollutant. The separate regulatory office priority lists would ultimately be culled to compile one Agency-wide action priority list. There would

be active public participation in the priority establishment process.

The management system recommended by the Work Group will satisfy the second objective of an integrated approach to the toxics problem. Moreover, the recommended management system will provide the Agency with a sound and consistent hazard assessment capability, which is the fourth objective of integration. The proposed system is characterized by a staff office for toxics program integration. The main functions of this staff office would be to (a) assess the relative hazard of toxics through development of the threat list; (b) assist the program offices in the development of their action priority lists; (c) recommend an Agency action priority list; and (d) perform an overall toxics coordination function between the various Headquarters and Regional offices and other Federal agencies. The staff office would have an advisory role only and would report to a committee of Assistant Administrators and Regional Administrators. The principal functions of such a committee would be to resolve issues relating to toxics program integration and to approve the Agency-wide action priority list. The report discusses organizational variations of the suggested committee approach.

The Work Group has analyzed the available options for achieving the third objective of integration, namely, the optimum utilization of TSCA in conjunction with other regulatory authorities. It recommends the use of TSCA as an umbrella-like legislative authority, which would be available to the various regulatory program offices of the Agency. Under such an arrangement, each regulatory program office would have the option of using its own legislative authority or TSCA (or a combination of both) for a particular regulatory activity. The recommended staff office for toxics program integration would act as the overall coordinator of this process and would ensure that TSCA is utilized in a consistent manner by OTS and the other offices.

The Work Group examined some "real-life" intermedia toxics problems in considerable detail in order to test the practical applicability of an integrated management approach. The problems were selected to explore the feasibility of applying fundamentally different approaches to their solution. The first approach would attempt to solve the problem posed by a class of toxic chemicals (N-nitroso compounds), the second would analyze the workability of controlling an industry category (electroplating), and the third would examine how the toxics pollution problem could be attacked on a geographic location basis (in two adjacent counties of Northern New Jersey). It was concluded that the overall integrated management approach recommended by the Work Group is generally compatible with each of the three special approaches examined; however, the "geographic approach," although it is a valuable tool for defining and assessing environmental health problems, is not recommended for the establishment of Agency priorities.

I. INTRODUCTION

On October 22, 1976, the Deputy Administrator established three work groups to develop an Agency strategy for the control of toxic substances in the environment:

- A. Toxics Strategy Coordination Group
- B. Toxic Substances Control Act (TSCA) Strategy Work Group
- C. Integrated Toxics Strategy Work Group

Working with the Assistant Administrators, Group A was established to oversee the activities of the other groups and to provide guidance to them. The charge of Work Group B was to develop an implementation strategy for TSCA. Work Group C was formed to facilitate the coordination of all of the Agency's toxics programs.

The Integrated Toxics Strategy Work Group identified three objectives: (1) develop a process by which the Agency can anticipate, identify, and rank those toxics problems in the environment that require attention; (2) develop a management procedure to ensure that coordinated action is taken on identified toxics problems; and (3) develop management plans for three specific inter-media problems posed by toxics.

This report has been prepared to address the above objectives. It is structured into several chapters that discuss the various elements requiring the Agency's consideration. Chapter II constitutes a statement of the toxics problem. Chapter III analyzes the problem and discusses the various tradeoffs required for an integrated Agency response. Chapter IV treats the key question of how to establish toxics priorities. Chapter V compares the major management approaches toward an integrated strategy. Chapter VI discusses how TSCA may be used to further advance an integrated strategy. Chapter VII analyzes

three intermedia toxics problems: (1) N-nitroso compounds; (2) the electroplating industry; and (3) a two-county area in Northern New Jersey. These three topics were selected to test how toxics management procedures can be applied to basically different types of practical problems. Special Task Forces were established to study these three problems; a full report on each will be issued at a later date. Appendix A suggests principles for ranking toxics problems. Appendix B contains guidelines for developing the Agency's action priority list. Appendix C constitutes a summary comparison of several toxics management approaches. Appendix D lists the names of the Work Group and Task Force members who contributed to this report.

CHAPTER II. STATEMENT OF THE PROBLEM

The problems which EPA faces in the area of toxics control stem in part from four causes: (1) the complex nature of the toxics problem; (2) EPA's present approach to reducing the risks from toxics; (3) the laws that have been enacted to control toxics; and (4) EPA's present method of implementing those laws under its jurisdiction. This chapter reviews each of these areas.

THE "TOXICS PROBLEM"

The initial programs of the Agency have addressed pollution problems principally by regulating a small number of gross pollution parameters. With the passage of time and the increased experience in implementing the requirements and authorities of air and water pollution control, interest has changed from standard pollution parameters, such as particulates, carbon monoxide, suspended solids and BOD, toward materials and pollutants which are harmful in small quantities and in low concentrations. The nation's growing concern for protection of public health and the environment from the ever-increasing production, use, and disposal of toxic chemicals was manifested in the recent enactment of the Toxic Substances Control Act and the hazardous waste control provisions of the Resource Conservation and Recovery Act of 1976.

These initiatives for controlling "toxics" in the environment present the Agency with both conceptual and strategic issues. At present, there is no accepted methodology for evaluating either the net effect of environmental toxic materials on human health or for establishing a relative measure of environmental toxicity arising from individual

three intermedia toxics problems: (1) N-nitroso compounds; (2) the electroplating industry; and (3) a two-county area in Northern New Jersey. These three topics were selected to test how toxics management procedures can be applied to basically different types of practical problems. Special Task Forces were established to study these three problems; a full report on each will be issued at a later date. Appendix A suggests principles for ranking toxics problems. Appendix B contains guidelines for developing the Agency's action priority list. Appendix C constitutes a summary comparison of several toxics management approaches. Appendix D lists the names of the Work Group and Task Force members who contributed to this report.

substances or individual waste releases. The lack of understanding of the relationship between human health and exposure is compounded by the extremely large variety of suspect materials and sources.

CONTROL TECHNOLOGY AND HEALTH EFFECTS

The Agency's approach to reducing risks from toxics problems is heavily oriented toward specific control technologies, especially in the water pollution program. Substances entering the environment have often been regulated to those levels that can be reached by the employment of accepted control technology (BPT, BAT, RACT, etc.). Although this approach has strong merit and should continue to be used, it can be argued that not enough emphasis is currently being placed on incorporating health and environmental effects data into our control strategies. Information on health effects does not often play a greater role because it is severely lacking, inadequate or not in a usable form. Since control technologies are medium-specific, this way of approaching the toxics problem may not give ample consideration to all media. For example, PCBs, regulated in the water medium, may also be discharged into the air. Similarly, vinyl chloride, which is regulated in the air, has been discharged into surface impoundments from where it entered groundwater supplies.

A related problem is the Agency's limited capability to make a sound hazard assessment on toxics. To date, a limited number of overall assessments has been made by the Cancer Assessment Group, ORD and OTS. However, not all individual program offices have the capability to make hazard assessments. In addition, there is no centralized organizational entity easily

Accessible to program offices to advise or make the necessary assessment. At a minimum, coordination of individual assessments is necessary to assure consistency.

FRAGMENTED AUTHORITIES

In general, the legislative mandates* administered by EPA may be viewed collectively as covering all media with regard to the control of toxics. However, except for TSCA and FIFRA, these laws were enacted originally to deal with a specific set of environmental problems related to only one medium such as air and were enacted by Congress in response to problems presented in single-medium terms -- the Houston Ship Channel's water pollution, Los Angeles' smog, etc.

Most significant among the deficiencies of the medium-specific authorities themselves is that, in general, such laws do not provide direct control over the manufacture and use of toxic substances. FIFRA is an exception, but it can only be used to prevent a pesticide from being introduced into the domestic market. Only TSCA can place limitations directly on all phases and aspects of manufacturing and thus can prevent completely the toxic from entering the environment through any medium. With the exception of FIFRA and Section 211 of the Clean Air Act regulating fuel additives, the other authorities do not require the manufacturer to test potentially dangerous new chemicals to determine their effects on health and the environment before they enter the market.

*The Federal Water Pollution Control Act, the Clean Air Act, the Marine Protection, Research and Sanctuaries Act, the Federal Insecticide, Fungicide & Rodenticide Act, the Resource Conservation and Recovery Act, the Safe Drinking Water Act, and the Toxic Substances Control Act.

MANAGEMENT PROBLEM

In broad terms, EPA's toxics management problem is that toxic chemicals can and do appear in more than a single environmental medium and are, therefore, not always amenable to single-medium solutions. As Congress enacted each of the media-oriented laws, EPA (and its predecessors) established separate organizational entities to carry out the legislation. These entities have become advocates of the "water program" or the "air program," and as a result of the passage of TSCA, the Agency is about to establish a full-time advocate of the "toxics program." This places an extra burden on the Regions, the Office of Enforcement, and other offices trying to coordinate their actions under the different authorities. The basic organizational structure of EPA, however, is not at issue in this study and may or may not be the most rational system for controlling toxics problems. The management problem to be examined in this report is how to make the current system work better and how to make it more responsive to the toxics threat.

Program responsiveness is intrinsically bound to the program priorities. In recent years, EPA's resolution of serious toxics problems has suffered from a lack of Agency priorities. In some of the major programs, such as construction grants and NPDES, the toxics control aspects did not receive a high priority and were, therefore, not adequately funded.

At the same time, the Agency has not established an overall system for ranking toxics and consequently has found itself often in a reactive mode to toxics problems — e.g., Kepone, PCBs, vinyl chloride, etc. Since the Agency has adopted no formal way of anticipating them, these problems are often brought to its attention by the news media or other external sources and become the "pollutants-of-the-month." This method of operating is not totally

avoidable. In fact, any toxics management system must contain sufficient flexibility to accommodate these situations. The basic danger in operating primarily in this fashion, however, is that the "pollutants-of-the-month," while serious, may be nowhere near as hazardous as some others which might be less obvious.

In keeping with the reactive posture to toxics, no single unit within the Agency has been given authority or responsibility for carrying out a comprehensive approach to toxics problem management. Program offices which propose regulations have not always adequately considered the intermedia effects of their regulations. A toxic regulated in one medium is occasionally ignored in another — or worse yet, deposited in another medium as a result of EPA regulation. For example, restricting the discharge of electroplating effluents into surface waters generated sludges which were placed in landfills, causing contamination of groundwaters by the toxic metals. Furthermore, individual program offices may not have broad enough responsibility to resolve a toxics problem even within a single medium. In the New Jersey example studied here, strict effluent guidelines may make it favorable for industries to discharge their wastes through municipal treatment plants where toxics receive little treatment. Since no pretreatment standards exist at the present, toxics are not adequately controlled.

Under the present management system, Agency actions could be subject to two major drawbacks: duplication of activities and incomplete regulation. For example, two EPA offices could each collect data on similar problems and independently characterize the same pollutant differently. Other serious toxics problems may not be characterized at all. In the N-nitroso compounds example, some offices in Headquarters acted independently while others cooperated with

one or more other offices during the early stages of identifying the problem. Some offices were not even aware of activities in other offices until quite late in the development of policy.

IMPACTS OF CURRENT EPA APPROACH

The problems cited above have had negative impacts on EPA's management of toxic substances control. The almost exclusive use of the medium-by-medium approach has raised serious doubts as to whether the overall health and environmental impacts of toxics have been adequately assessed and controlled. EPA's own resources, moreover, are not conserved when the management of toxics programs by different offices and Regions is not adequately coordinated due to the lack of overall priorities. The ORD, for example, clearly needs such guidance if it is to be responsive to Agency-wide research needs. Not all of EPA's actions have been fragmented. It is worth noting that a number of recent efforts, such as the PCB regulations under TSCA and the Section 307 toxics regulations under the FWPCA, are considering the multi-media impact of these regulations.

Overall, however, adequate mechanisms are not available for the coordination of offices and Regions which are working on different aspects of the same problem. In addition, there is no single place in EPA where a Headquarters office, a laboratory, or a Regional office can find out what work is being conducted on a particular toxics problem. Nor is there a single office in the Agency charged with providing consistent hazard assessments.

Although information is scarce in the toxics area, neither the national air- nor the national water-monitoring networks have given priority to toxics monitoring until the very recent past. In summary, until the passage of TSCA, toxics problems were often given high priority or were considered by EPA only

in a crisis atmosphere. Although most of the EPA staff have recognized the need to approach problems in a less reactive manner, a process to achieve this end has not been adopted. The passage of TSCA makes it mandatory.

The next chapter analyzes the problems described above and proposes an integrated toxics control strategy to begin to solve them.

CHAPTER III. ANALYSIS OF THE PROBLEM AND A PROPOSED RESPONSE

AGENCY-WIDE TOXICS GOAL

With the passage of the Toxic Substances Control Act, the Agency is mandated to coordinate actions taken under TSCA with actions taken under other Federal laws, especially those administered by EPA. As described in the previous chapter, EPA does not have an adequate management system in place to accommodate this requirement of TSCA.

Better coordination of EPA programs, however, is not in itself going to solve the toxics management problems. The Agency's program to control toxics problems also must focus on setting priorities, and on the multimedia nature of toxics contamination. Good data must be available from all sources to formulate assessments and support EPA's regulatory decisions. To reduce the emphasis on "pollutants-of-the-month," an anticipatory management system must be formulated and installed. Coordination, therefore, must be carried out with a positive purpose in mind and not as in the past where coordination often meant that one program would be given the opportunity to protect itself from incursions by other programs. We need a positive goal.

The Work Group proposes that the goal of the EPA's management system for toxics should be to ensure that the Agency can anticipate toxics problems and provide the optimum solution to those problems, taking into account the multimedia nature of toxics. This is the basis of an integrated approach to toxics management.

AN INTEGRATED APPROACH

An integrated approach for controlling risks to health and the environment that are the result of exposure to toxic substances has three major characteristics:

- o All pathways and routes of exposure to the toxic contaminant, regardless of media, are explicitly considered in the analysis (e.g., air, water, land, consumer products).
- o The tradeoffs for controlling exposure to a toxic from one medium as opposed to another are explicitly considered (e.g., toxics removed from air emissions by scrubbers can become a water problem).
- o The residuals and by-products of controlling a toxic in one medium are explicitly considered (e.g., sewage sludge presents a serious waste disposal problem).

There are considerable advantages to implementing a process that entails an integrated approach to toxics problems. To begin with, the analysis would be conducted from a multimedia standpoint. If the analyses of the contamination, the level of exposure, and the fate of the toxic are conducted from this point of view, the results would be an improved assessment of the overall risk to health and the environment. All assessments, whether made by an individual program office or a centralized organizational entity, would be based on health and environmental data from all media. This assessment must be supported by a data system that makes needed information data readily accessible. Health and environmental data must be updated regularly to provide this vital base. Priorities established after such an analysis would be more defensible.

In addition, the feasible methods of control for all media could be considered simultaneously rather than piecemeal, in order to eliminate the problem of control technology merely transferring the problem from one medium to another, as has happened in the electroplating industry. Significant program resources could be saved by efficient coordination, minimizing redundant efforts in both regulatory and research support areas. Data on health effects, exposure,

and impacts could be utilized to a greater extent by all appropriate offices. Moreover, an integrated approach provides the latitude to choose the most appropriate authority or authorities to control a problem from all the statutes the Agency administers.

OBJECTIVES OF AN INTEGRATED APPROACH

Any scheme to achieve an integrated approach to the toxics problem should meet the following four objectives:

1. To identify and rank toxics problems on an Agency-wide basis so that EPA is placed in a more anticipatory position.
2. To adopt a management system which integrates the Agency approach to toxics problems and which effectively coordinates EPA and other Federal activities so that resources are efficiently utilized and sound actions result.
3. To develop procedures that direct the efficient utilization of all EPA regulatory authorities and ensure the integration of these authorities with the Toxic Substances Control Act.
4. To develop and improve EPA's ability to make sound and consistent hazard assessments based on health and environmental data.

In arriving at a solution to a toxics problem, various internal and external inputs must be carefully weighed and incorporated. Along with individual program office needs, the views of the public, industry and other interested parties must be factored in. Any scheme must allow for both routine operating situations and for emergency responses. Furthermore, the overall

Part of any management system should be to allow the Agency to make well-informed and coordinated decisions which will place the Agency in a prospec-
sive position to toxics control. The management system, moreover, must have the support and attention of top Agency personnel to operate successfully.

TRADEOFFS

The establishment of an integrated toxics strategy would involve a certain number of tradeoffs. To begin with, whenever coordination is emphasized, delays are likely to occur, and action may be slower than for a situation in which each program office and Region is completely free to make its own decisions and set its own priorities. The more coordination one chooses (i.e., intra-Agency, inter-Agency, State/Local), the more time and resources are expended for this process. At the same time, no matter how much effort is put into coordination, individual offices and Regions can never be totally synchronized. In fact, they function best with some degree of flexibility. This balancing between the amount of coordination, time, and making more effective decisions has been carefully considered in this report.

Another tradeoff occurs in deciding how much Agency-wide priority setting is beneficial. If an Agency-wide priority system for toxics is adopted, individual offices might de-emphasize some ongoing programs to conform to Agency-wide priorities. However, regulatory program offices are often the most knowledgeable about a specific problem in their area and have the best expertise to handle the problem. Their existing programs may be fashioned to reflect their concerns and priorities. If the Agency priority system is not sufficiently flexible

For does not adequately provide for the input of the individual offices, serious neglect of important problems could result. Similarly, toxics problems are often geographically specific, and the magnitude of their effect can be greater in one Region of the country than in another. Flexibility must be provided to allow Regions to respond to their specific needs as well. These concerns are very real, and to the best of our ability are reflected in this report.

This chapter analyzed the toxics management problem and identified the objectives of an integrated control strategy. The remainder of the report will discuss in more detail the options available to meet these objectives and will present the Work Group's recommendations.

IV. PRIORITIES: IDENTIFYING AND RANKING TOXICS PROBLEMS

The first objective of the integrated toxics strategy is to ensure that EPA has an adequate system for identifying and ranking toxics problems. This chapter presents the Work Group's recommendation for a ranking process by which the Agency could establish priorities for its toxics control activities. The problems arising from the current lack of such an EPA process have been described in the preceding chapters of this report. The benefits that would accrue from an Agency-wide system for establishing toxics priorities include:

- (1) Program planning by all Headquarters and Regional offices would be greatly facilitated.
- (2) High priority toxics problems would be identified and "pollutants-of-the-month" could be put in proper perspective.
- (3) Research needs would be better identified.
- (4) The problem of resource allocation between competing projects would be alleviated.
- (5) The Agency's annual budget request would be better supported, and EPA resource allocations would be facilitated.
- (6) The courts could be provided with a rationale for reviewing EPA's decisions relating to toxics problems.
- (7) Regional and State permitting and enforcement activities could be better focused on the most severe environmental problems.
- (8) The Regional Offices would have better guidance on what specific toxics problems to investigate.
- (9) The Agency would be in a position to review its various toxics programs for consistency.
- (10) Related efforts of other Federal agencies could be better coordinated.

The Work Group has identified two distinct phases in the development of a toxics ranking scheme. In the first phase, a toxics problem "threat list" would be developed, based on scientific judgment regarding the relative severity of each problem, examining such factors as health effects, human exposure levels, and ecological damage. The "threat list" process embodies a formal comparative hazard assessment function which would centralize Agency decisions concerning prioritization of toxics. In the second phase, an Agency "action priority list" which ranks toxic problems in their order of importance for research and regulatory action would be developed. This list would be based not only on the degree of hazard to health and the environment, but also on such factors as the feasibility, cost-effectiveness and current progress toward control of each pollutant on the threat list. The entire ranking process is cyclical; the first iteration may require as much as 18 months for completion. The following iterations will consist mainly of revising and updating the lists, which is expected to occur periodically and in concert with the formal Agency planning process. For example, it is expected that the "action priority list" would be included in the toxics section of the Agency Guidance.

To conduct the ranking process, we recommend the establishment of an EPA core group with technical assistance and advice provided by an external panel of experts. Furthermore, we recommend that public participation be encouraged to the maximum extent in order to attain broad acceptance of the process.

In the following discussion, the nature of the proposed two priority lists will be examined, as well as the technical and administrative aspects of the ranking process.

1. Nature of the Priority Lists

TOXICS PROBLEM THREAT LIST

In the Work Group's deliberations on the proposed threat list the question arose as to whether there should be one or more such lists. The principal drawback of one threat list is that ranking health effects against environmental effects is extremely subjective and can be sensitive to policy considerations. For example, in some regions of the nation, environmental as opposed to human health considerations could be the dominant ranking criteria while in other places the opposite may be true. The best solution appears to be to rank human health and environmental effects separately, and then make the more policy-oriented decisions of how to compare these basically different types of threats against one another. The responsibility for these policy decisions and compiling the one threat list should be held solely by EPA.

Another issue pertaining to the number of toxics problem threat lists is whether there should exist a separate chemical threat list, industry threat list, and geographic location threat list. The ranking of geographic locations is not endorsed. We believe that designating "hazardous locations" could be accompanied by external pressure either to take a location off the list, because it is bad for local business, or to put locations on the list because a community wanted EPA to address a relatively insignificant environmental problem. On the other hand, an industry approach to toxics control could be efficient and cost-effective. We recommend that there be only one toxics threat list which includes chemicals, classes of chemicals, and industrial sources.

ACTION PRIORITY LIST

As in the consideration of the threat list, there is a range of choices regarding the number of action priority lists. The Work Group has considered the following options:

- (1) One Agency-wide action priority list derived directly from the toxics problem threat list.
- (2) No Agency-wide action priority list, but each regulatory program office (and perhaps ORD and OE) would have its own priority list. These separate lists would be derived from the toxics problem threat list, but would also contain substances other than toxics and various items that are legally mandated (e.g., by consent decree) or relate to long-term projects.
- (3) One Agency-wide priority list, which would be compiled from the separate priority lists established in the preceding option.

Under the third option, each Headquarters regulatory program office (and perhaps ORD and OE) would propose an action list as part of its annual program plan. An independent EPA staff* would then propose a more limited Agency-wide action list based on these inputs.

The Work Group is divided on the issue of whether an Agency-wide priority list is necessary or even desirable. The chief argument for separate program office action lists is that the regulatory offices, by nature of their specialized experience, are the most suitable entities for the establishment of priorities. On the other hand, an Agency-wide action list would provide better guidance for program planning by all Headquarters and Regional Offices.

*Discussed further in Chapter V.

The third alternative identified above is recommended, therefore, as a compromise which offers the benefits of both competing options. An Agency-wide action priority list derived from regulatory program lists offers EPA sufficient flexibility to meet its manifold commitments. The derivation of such an action priority list would take into account the views of all EPA Headquarters and Regional offices, as will be discussed further in Chapter V.

In both the action priority list and the threat list there is a need to consider what kind of precision one wishes the list to imply. In view of the uncertainties in defining precisely the factors needed to make such a ranking (effects, exposure, abatement costs, benefits, data credibility, etc.), we recommend a coarse ranking, such as high, medium and low priorities, rather than a strict ordinal array for both the action and threat lists. Furthermore, since resource constraints will probably limit EPA's actions to only the highest category, it is also recommended that a finer subdivision of this group be given where possible.

2. Technical Considerations for a Ranking System

There is general agreement in the Work Group that a technical process for producing an Agency toxics problem action priority list must proceed as follows: (1) select toxics problem candidates, (2) gather and format the available data, (3) from the data, derive health and ecological effects, (4) describe and rank the seriousness of the threat from health and ecological effects to produce a threat list, and (5) derive the programmatic and the Agency action lists by combining the knowledge on threats with such factors as EPA's ability to abate the threat, cost-effectiveness of EPA's actions, etc. Many options have been proposed for each of the above five areas; this chapter will discuss only the major options and recommendations.

CANDIDATE SELECTION

There are two issues involved in candidate selection. The first is from what pool will toxics problems be drawn, and the second is how many toxics problems should be seriously evaluated.

The spectrum of choices for the "from what pool" issue range from a systematic consideration of all chemicals and industries to consideration of candidate nominations by a select set of professionally competent groups. After consideration of the many options proposed, we recommend an open nomination process whereby any candidate submitted by anyone, including EPA offices, other Federal agencies, and the interested public, would be considered. This nomination process would include the list of candidates for testing, as submitted by the committee of Federal agency representatives established under Section 4(e) of TSCA.

Candidate selection would be accomplished by two methods. The first is to consider submissions by anyone when accompanied by a quantitative argument for its inclusion, and the second is to compile a list of say 250 chemicals and 5 to 10 industrial sources with the highest release rates. These candidates would then go through an initial screen to limit their number to a manageable size. The initial screen would rely on an EPA group and an advisory group of technical experts (in which other Federal agencies as well as the general public would be represented) to jointly select, from the candidates proposed, those toxics problems meriting serious evaluation.

The choices for the issue of how many toxics problems should be seriously evaluated range from thousands to fewer than a hundred. It is felt that considering fewer seriously (say less than 100) would cover the greater part

of toxics problems reasonably well without using inordinate resources. Thus, it is our recommendation that no more than 100 toxics problems be seriously evaluated in any given ranking exercise.

GATHERING AND FORMATTING OF DATA

Data will have to be assembled (through literature search only) and formatted so that work on deriving effects can proceed efficiently. This will be a time-consuming albeit perfunctory effort. It is recommended that it be done under contract because of the job's routine and manpower-intensive characteristics.

DERIVATION OF EFFECTS

The actual process for deriving the health and ecological effects from the assembled data is currently being studied by a number of groups, including the National Science Foundation and the Stanford Research Institute, and hence the Work Group did not address the issues involved here.

DERIVATION OF THE TOXICS PROBLEM THREAT LIST

While the derivation of a threat list is something that is appropriate for scientists to do, it is not a purely scientific process. A mechanical process of moving from effects or risk estimates to a ranking by assigning values to various parameters (as often proposed) is not appropriate for this exercise. It is felt that such a process cannot account for the complicated judgments involved in ranking one problem against another. Hence, we recommend a less mechanical and more judgmental system. Because of the subjective component inevitable in any ranking exercise, it is essential to state explicitly the broad principles to be followed in making these judgments. A suggestion for these principles is given in Appendix A.

DERIVATION OF THE AGENCY ACTION PRIORITY LIST

The technical issues in deriving an action list are similar to those for the derivation of the threat list. Either a routinized process (applying for example cost-effectiveness criteria) or a judgmental system could be adopted. Again, the Work Group favors the adoption of the judgmental process, allowing for adequate review and public participation. It must be stressed that application of judgment will be required after formulation of programmatic priority lists, and after estimation of cost effectiveness, amenability to control, immediacy of problem, and public interest. These judgments should be rendered by the politically accountable officials rather than the EPA staff or the external advisory panel. The Work Group's suggestions for guidance principles for the derivation of the action list are in Appendix B.

3. Administrative Considerations for a Ranking System

The issues to be considered here are the degree of public participation, the role of the expert panel, and functions of the EPA staff group responsible for the development of the ranking lists.

DEGREE OF PUBLIC PARTICIPATION

As mentioned earlier, public review and participation is necessary for getting broad acceptance of the ranking process. Thus, public participation is recommended for candidate selection, development of the ranking guidelines, selection of the expert panel, and review of the draft threat list and the draft Agency priority list.

ROLE OF EXPERT PANEL

The Work Group envisions an expert panel in an advisory role, working jointly with an EPA staff group in the candidate selection process and in the

assessment and comparison of the health and ecological effects of toxics problems. However, the final authority for producing the threat list must rest with the EPA. In the development of the action priority list, no direct involvement of the panel of outside experts is suggested since these comparisons are removed from the effects data and depend on Agency resources and commitments.

FUNCTIONS OF THE EPA STAFF GROUP

The functions and organizational structure of the EPA staff group that would develop the priority lists will be discussed in the next chapter of this report.

V. MANAGEMENT APPROACHES TO FACILITATE AN INTEGRATED STRATEGY

The second objective of an integrated toxics strategy is the development of an integrated management system. This chapter will examine six alternative management approaches. These range from a decentralized organizational structure (i.e., the status quo) to a conceivable option where one Assistant Administrator directs all of the Agency's toxics control functions:

1. Status Quo
2. Information Office — a staff office which would function as a clearinghouse for the Agency's toxics control activities.
3. Information Office plus Active Coordination — a staff office with certain advisory functions regarding priorities and lead office responsibilities.
4. Centralized Information Gathering — a consolidation of the Agency's information-gathering and toxics hazard assessment activities.
5. Toxics Program Integration — a staff office with advisory functions backed up by sufficient authority to achieve integrated Agency action.
6. Centralized Toxics Management — one Assistant Administrator's office performing most of the Agency's toxics control activities.

The alternatives described here should be regarded as six discrete points on a management spectrum which ranges from the status quo to a highly centralized and authoritarian toxics control approach. The table in Appendix C constitutes a rough summary of how the various toxics control functions could be performed under each of the six management approaches.

In the following, the six alternative approaches will be discussed in varying degrees of detail. The recommended management approach (Alternative #5) will receive special emphasis. To avoid repetition, some of the alternative approaches will be discussed only in terms of how they differ from the ones already described previously.

1. STATUS QUO

The status quo is characterized by the absence of Agency-wide prospective planning for toxics control. The Agency is largely in a reactive mode, necessitating ad hoc responses to "pollutants-of-the-month." Apart from emergency responses, the individual program offices establish their own priorities for toxics control, based on available resources and specific mandates under the applicable environmental legislation.

2. INFORMATION OFFICE

This management alternative is a minor yet significant variant of the status quo. It involves the establishment of a staff office which would function as an information clearinghouse for the Agency's toxics control activities. The information office would monitor the toxics activities of each EPA program office and would refer toxics information requests to the proper expert(s) within the Agency. A staff office with such limited responsibilities would not require more than 2 or 3 professionals. Of course, the responsibilities of an information office could be expanded considerably to include a capability to respond directly to information requests by furnishing critically evaluated toxics data. Such an expanded information office would require a staff of at least 15 professionals.

An information office, even with minimum staffing, could provide answers to the basic question of who is doing what about toxics in EPA. Particularly the Regional Offices would find such a centralized information source useful. However, this management option hardly goes beyond the status quo since it does not facilitate the establishment of Agency priorities, nor an integrated approach to toxics management.

3. INFORMATION OFFICE PLUS ACTIVE COORDINATION

This management alternative is a logical extension of the information office. Its basic organizational feature is a staff office which would attempt to coordinate the Agency's various toxics management activities without the authority to force compliance by the individual program offices. The staff office would develop and maintain the toxics problem "threat list" and Agency "action priority list" discussed in the previous chapter and recommend lead office responsibilities for the handling of each individual toxics problem. The various program offices would establish their own action priority lists; however, the staff office would review these and make recommendations regarding any changes it considered advisable. The staff office would also review the toxics management activities of the various EPA program offices and would identify weaknesses and gaps in any of the toxics control functions. It is estimated that such a staff office could operate with about 10 or 20 professionals.

Although this management alternative may be partially successful in effecting interoffice coordination by means of persuasion, it would not significantly further the Agency's integrated response to inter-media

toxics problems. Individual regulatory program offices, whose activities are mandated by media-oriented legislation, are unlikely to substantially change their programs or revise their priorities upon the recommendations of a staff office. Under this management option, the attention of the Administrator would have to be secured on a routine basis to bring about integrated Agency response to toxics problems.

4. CENTRALIZED INFORMATION GATHERING

This option is based on the premise that EPA's toxics control activities are in disarray not so much because regulatory authorities are fragmented among several relatively autonomous program offices, as because each of those program offices independently compiles, interprets, and responds to toxics data according to its own parochial vantage point. Accordingly, this management approach would go one step further toward integration than Alternative #3, by consolidating into one non-regulatory office all toxics-related information-gathering authorities under the CAA, FWPCA, FIFRA, SDWA, MPR&SA, TSCA, and RCRA. This centralized information-gathering office would compile, process, store, retrieve, review, analyze, and disseminate data on toxic substances, their sources, transport routes, and effects. Under this management option, the individual regulatory program offices would in effect relinquish their own information-gathering functions; however, the staff office described in Alternative #3 would still be operational and develop the "threat list" and the Agency "action priority list."

The consolidation of all information-gathering activities regarding toxics into one office would seem to foster not only cost-efficient operation

but also more holistic assessments of intermedia environmental problems. On the other hand, it is difficult to conceive how the individual regulatory programs could function without the capability of generating the types and amounts of information they perceive as necessary. Furthermore, a rather convincing argument could be made that any information compiled by those who are not the intended users is inherently inadequate.

5. TOXICS PROGRAM INTEGRATION

One of the principal conclusions reached by this Work Group during its four months of deliberations was that much more than "coordination" between offices is needed to solve the serious management problems the Agency has encountered in the toxics area. What is required is a strong, well-managed toxics integration program which will tie together EPA's currently fragmented efforts. The following toxics management approach was drafted by the Work Group with this consideration in mind.

The proposed management approach is essentially a hybrid of Alternative #3 and Alternative #4. It is characterized by a staff office for toxics program integration; however, unlike in Alternative #3, the staff office is backed up by sufficient authority to effect Agency-wide compliance to its recommendations. Also, the recommended approach would offer the Agency independent hazard assessment capability (as inherent in Alternative #4); however, without impairing the operation of the individual program offices through centralization of all information-gathering functions.

The staff office for toxics program integration could be located

in the Administrator's Office, in OTS, in OPM, or perhaps somewhere else within the Agency.* Under the organizational option recommended by the majority of the Work Group, the staff office would report to a "toxics steering committee," comprised of Assistant Administrators and some representatives of the Regional Administrators. The principal functions of such a committee would be to resolve program integration problems and to adopt an Agency-wide action priority list; in addition, it would offer the opportunity for each program office and the Regional offices to be directly involved in the decision-making process.

It should be emphasized that there are some organizational variants of the Toxics Program Integration approach which should receive careful consideration. One is where the staff office for toxics program integration would report to the Assistant Administrator for Toxic Substances. The AATS would assume all of the functions of the toxics steering committee. Through such an arrangement, key policy decisions on the recommendations of the staff office could be made more easily than through a committee; however, concern was expressed by some members of the Work Group that one Assistant Administrator might not be able to wield enough authority to effect Agency-wide integration of toxics management. This apparent weakness might be avoided by an organizational nuance in which the Assistant Administrator for Toxic Substances would still be in overall charge of toxics program integration; however, he/she would periodically convene the toxics steering committee for resolution of the most difficult issues of integration.

*The Work Group has not made a recommendation in this regard.

Integrated toxics management under the proposed management approach can be best described perhaps by examining how the various toxics control functions would be accomplished.

Prospective Planning and Problem Identification: The staff office for toxics program integration would make an intensive effort to identify toxics problems before they became critical. It would be responsible for the development and maintenance of the "threat list" discussed in the previous chapter. In essence, this staff office would provide an independent hazard assessment capability for the Agency, similar to the function now performed on a limited basis by the Cancer Assessment Group. The staff office would contain health effects expertise which would be available to those within the Agency who are responsible for taking regulatory actions.

Information Gathering and Pollutant Characterization: The individual program offices would continue to perform these important functions; however, the staff office for toxics integration would furnish guidance (based on the threat list development effort) regarding, (a) those pollutants which require preferential characterization, and (b) the specific data required for integrated Agency response to each problem. The staff office could greatly reduce the existing duplications and omissions in the area of information gathering, and it could also assure that the expended efforts yield the most needed data for the Agency. Another function of the staff office would be to establish and chair a standing work group on toxics data management which would include representatives from all Headquarters and Regional offices and from other Federal agencies. That work group would review Agency policy and practices regarding

toxics data management in the broadest sense, including data collection, storage, and retrieval.

Priority Establishment: The staff office would recommend Agency toxics priorities through development and maintenance of the "action priority list" discussed in the previous chapter. A revised list would be submitted periodically to the appropriate decision-makers for approval. The establishment of toxics priorities would be in close accord with the Agency's annual planning process and would be reflected in the Agency Guidance.

Control Strategy Development: This toxics control function is the logical extension of the problem ranking process. The staff office would review the toxics program strategy plans of all Headquarters and Regional offices and would assemble the Agency's annual integrated toxics program plan, with recommendations of lead office responsibilities. The staff office would routinely analyze the Agency's regulatory and non-regulatory options for responding to intermedia toxics problems and would make its recommendations to the appropriate decision-makers.

Emergency Response: The staff office would act as the Agency's principal point of contact for "pollutant-of-the-month" problems. It would propose action plans to the appropriate program offices and lead office responsibilities. The staff office would also follow up EPA's response to the emergency and evaluate the effectiveness of the response.

R&D and Monitoring: Due to the fragmentation of these control functions along organizational and geographical lines, and especially because of the basically long-range nature of R&D, it is difficult to keep them in accord

with ever-changing Agency toxics priorities. Therefore, the staff office would periodically identify those specific R&D and monitoring needs which require increased (or decreased) emphasis and would recommend the performance of relatively minor projects directly to the pertinent program offices. Major revision of priorities would be accomplished via the approval of the Agency's decision-makers on toxics. It should be noted that under this management approach the Office of Research and Development would perform its annual planning function only after the Agency-wide toxics action priority list has been adopted.

Rulemaking: The current "1000.6 approach" would be considerably improved through the Control Strategy Development function described in this discussion. The Agency's annual integrated toxics program plan will help assure the promulgation of environmental standards and regulations with the optimum safeguards against adverse intermedia repercussions. Also, the proposed staff office will promote consistency in rulemaking under the various legislative authorities (e.g., testing requirements under FIFRA and TSCA).

Enforcement: The staff office for toxics program integration will review the enforcement actions of the EPA and of other Federal agencies. It will provide guidance to the Office of Enforcement on items requiring priority attention by the Agency.

Regional and Federal Agency Coordination: The staff office would actively promote more efficient communication and cooperation with the EPA Regions and other Federal agencies on toxics management problems. The proposed Regional representation on a toxics steering committee could be a significant step toward achieving a united front within the Agency. The integration of all Federal toxics programs will be more difficult to achieve; however, that

problem will have to be addressed in order to fulfill the intent of the Toxic Substances Control Act.

Public Participation: There would be active public participation in the development of the toxics problem threat list and the Agency action priority list, as discussed in Chapter IV.

Overview Activities: The staff office would monitor and critically review the Agency's performance on the various toxics control functions. When the need for corrective action is perceived, it would be brought to the attention of the affected program office, and if necessary, the Agency's decision-makers on toxics.

There is no doubt that successful implementation of all the described aspects of the proposed toxics program integration approach will require adequate time and personnel resources. It is estimated that a staff of 30 professionals, over a period of two years, could make the proposed management approach work effectively (assuming an adequate budget for data gathering through contract). However, a more modest program aimed primarily at the establishment of Agency toxics priorities would require perhaps half the time and resources. A staff office with about 15 professionals could be established in a relatively short time to accomplish the most essential tasks of toxics integration. After acquiring the necessary operational experience, this staff office could be gradually increased for maximum effectiveness.

6. Centralized Toxics Management

Under this management approach, one Assistant Administrator's office (for the purposes of this discussion, the Office of Toxic Substances) would essentially plan and carry out the Agency's entire toxics control program.

Each existing program office, with the exception of ORD and OE, would relinquish to the OTS those parts of its program that relate to toxic substances. This management approach could be regarded as the ultimate extension of Alternative #4, in which only the information-gathering functions under the various legislative mandates for toxics were centralized. Under this kind of arrangement, there is no longer a need for the staff office proposed in Alternative #5, since the identical organizational unit would be responsible for performing most of the major toxics control functions, especially those of priority establishment, control strategy development, and rulemaking. The research, monitoring, and enforcement functions would still remain the responsibilities of ORD and OE; however, these organizational units would now have to coordinate their toxics control activities only with OTS rather than with several regulatory program offices.

Centralized toxics management would undoubtedly provide the maximum integration of the Agency's toxics control activities. Toxics problems would be attacked over a broad front versus the traditional media approach, although media-specific enabling legislation would still have to be used for regulatory purposes. Toxics problem priorities could be established routinely by one organizational unit of the Agency, with sufficient authority to marshal resources to those problem areas where they are most needed.

The disadvantages of a centralized toxics management approach appear to be quite formidable. First of all, it is extremely difficult to see how all of the Agency's toxics control activities could be centralized in one office. The main obstacle is the lack of a precise or even semi-precise definition of what constitutes a toxic material. The line of demarcation between a toxic

and a non-toxic material is so ambiguous that it is almost hopeless to make a rational decision on what specific activities should be transferred from the various regulatory program offices to the OTS. For example, how can the Office of Solid Waste relinquish its toxics activities while it is pursuing a legally mandated effort, under an 18-month deadline, to define a hazardous waste?

Even if it were feasible to make a rational judgment on what specific toxics activities should be transferred from the existing regulatory program offices, it would appear highly questionable to remove media-oriented efforts from those offices where the available media expertise is located. To do so would truncate the individual program offices to such an extent that the overall operating capability of the Agency would be diminished. Finally, the creation of one office sufficiently large to perform most of the Agency's toxics functions would appear to constitute poor organizational management. Considering these shortcomings of the centralized toxics management approach, one can reasonably conclude that its implementation would result in toxics management integration at the expense of program efficiency and cost effectiveness.

RECOMMENDATION

Upon considering the six management options described in this chapter, we recommend a phased implementation of the toxics program integration approach (Alternative #5). That management approach appears to be the most effective — and at the same time the most realistic — means to achieve a truly integrated Agency response to toxics problems.

VI. ACCOMPLISHING THE INTEGRATED TOXICS STRATEGY

The two previous chapters have reviewed the available options for meeting the first two objectives of the integrated toxics strategy, i.e., a system to identify and rank toxics problems, and a coordinative management system. The third objective, reviewed in this chapter, is to maximize the use of TSCA as an integrative tool, and to ensure that all of the Agency's regulations and rule-making authorities are effectively utilized to control toxics in an integrated manner.

The provisions of TSCA mandate an integrated approach to controlling toxics problems. Sections 6 and 9 of the Act require coordination of actions taken under TSCA with actions taken under other Federal laws. They also require EPA to use other authorities administered by EPA unless it is in the public interest to use TSCA. In order to make the public interest determination, the Agency will be required to consider the strengths and weaknesses of controlling a particular problem utilizing an appropriate medium-specific authority or utilizing TSCA. Basic to this determination is an analysis of the impact of any action taken on all media.

Section 9 of TSCA can also be interpreted as to require EPA to use to use TSCA if its other legislative authorities are inadequate to solve a medium-specific toxics problem. According to this approach, TSCA would be used not only to control the entry of new chemicals into the market, but also to give EPA an umbrella-like legislative mandate for pollution control.

Section 6 of TSCA could be used to control toxic substances in air or water if EPA determined that it was in the public interest to do so. This section gives EPA the authority to prohibit or limit the manufacturing, processing, distribution, use or disposal of a chemical substance that presents an

unreasonable risk of injury to health or the environment. For example, regulatory action under TSCA could be used to limit the entry of phosphates (e.g., detergents) into the water environment if it were determined that phosphates present an unreasonable risk to the environment. Activities to date under the Federal Water Pollution Control Act to control phosphate contamination have lead to mixed results. If permissible under a medium-oriented statute, a judgment could be made that it is not the best tool available for controlling a toxic and that TSCA should be utilized instead, either exclusively or in conjunction with that statute.

The question to be addressed here is how EPA should use TSCA for its regulatory purposes. One option is to give rulemaking authority exclusively to the Assistant Administrator for Toxic Substances who would, upon the advice of individual program officies and after adequate coordination, develop and promulgate a regulation for the chemical -- phosphates, for example. Alternatively, the authority to initiate and develop a Section 6 regulation for the control of a toxics problem could be available to all Headquarters offices. Under this option, the office that has the most technical expertise or involvement with a particular problem would prepare the development plan and take the lead responsibility for the rulemaking activity, working with OTS and OGC in drafting the regulation. All of the established procedures for proposed rulemaking (EPA order 1000.6) would remain in effect. The Work Group has not made a recommendation regarding the relative merits of the available implementation alternatives.

The intent here, of course, is not to diminish in any way the authorities or programs of OTS but rather to provide a positive alternative to the

other program offices. The Office of Solid Waste, for example, regulates the disposal of solid wastes under RCRA. Under this option, OSW could propose rules under either TSCA or RCRA after an analysis of the particular residuals problem, according to the principles of the integrated strategy (taking legal restraints into account). The staff office for toxics program integration, as recommended in Chapter V, would act as the overall coordinator of this process and would work with OTS and the other offices to ensure that TSCA was being utilized in a consistent manner by OTS and the other offices.

This approach has a number of advantages. It would provide more resources for TSCA regulatory activities and reduce the burden on the Office of Toxic Substances. In addition, this approach would force each program office to coordinate its rulemaking activity more thoroughly with the other regulatory program offices and open the lines of communication on a regular basis.

The next chapter will review the major findings of the three special problem Task Forces (N-nitroso compounds, the electroplating industry, and Northern New Jersey) and will examine the applicability of the integrated toxics management approach to the identified problems.

VII. ANALYSIS OF THREE INTERMEDIA TOXICS PROBLEMS

The Work Group examined some "real-life" intermedia toxics problems in considerable detail in order to test the practical applicability of an integrated management approach. The problems were selected to explore the feasibility of applying fundamentally different approaches to their solution. The first approach would attempt to solve the problem posed by a class of toxic chemicals (N-nitroso compounds), the second would analyze the workability of controlling an industry category (electroplating), and the third would examine how the toxics pollution problem could be attacked on a geographic location basis (in two adjacent counties of Northern New Jersey).

Three special Task Forces were formed to study each problem area and to report their findings to the overall Work Group. The full reports of these Task Forces will be completed and distributed at a later date. This chapter will briefly summarize the major findings and will attempt to show how the Work Group's recommended integrated toxics management approach could alleviate some of the problems identified.

1. N-Nitroso Compounds

N-Nitroso compounds comprise the classes of chemicals known as nitrosamines and nitrosamides. They are by-products of several industrial processes, particularly the manufacture of certain pesticides and cutting fluids. In addition, N-nitroso compounds form whenever their precursors, nitroso groups and amine or amide groups, combine. These precursors are abundant both in nature and in industrial products. Because N-nitroso compounds can form in vivo, human exposure to the precursors may be of equal concern as exposure to the N-nitroso compounds themselves.

N-nitroso compounds are generally regarded as extremely potent animal carcinogens and are suspect human carcinogens. The Task Force study confirmed what was pointed out in Chapter II of this report: that one of the most formidable problems in toxics management is the general lack of sufficient health effects data to support regulatory action. Regarding the Agency's past performance in the handling of the N-nitroso compounds problem, the study concluded that there is much room for improvement in the functions of data gathering, hazard assessment, and coordination between the various program offices.

The toxics management approach proposed in Chapter V, had it been in effect, could have significantly strengthened the Agency's capability to respond to the N-nitroso compounds problem in an anticipatory fashion. The staff office for toxics program integration would have been involved already in the early stages of problem identification and hazard assessment. N-nitroso compounds would have been put in their proper perspective relative to other problems by utilization of the threat list and the Agency action priority list, with active public participation. The staff office would have avoided considerable duplication of effort within and outside the Agency by coordinating the many independently performed activities in information-gathering, research, and monitoring. The carefully planned and systematic performance of the various hazard assessment functions would have significantly strengthened the Agency's data base for regulation. With the recent enactment of TSCA, the assigned lead office would be currently in the position to request pertinent health effects and technical data from the affected industries.

After thorough evaluation of the Agency's available regulatory and non-regulatory options, an integrated control strategy would be developed and submitted for the approval by EPA's appropriate decision-makers.

2. Electroplating Industry

The electroplating industry in the United States consists of 2,250 to 3,600 "job shops" and 9,000 to 15,000 "captive shops." The waste effluents of these establishments contain beryllium, cadmium, chromium, copper, cyanide, lead, nickel, zinc, chlorinated hydrocarbons, and other toxic materials.

To carry out the mandate of the Federal Water Pollution Control Act, in 1974 and 1975 the Agency promulgated effluent guidelines and standards applicable to the electroplating industry (which ultimately were suspended or revoked). Unfortunately, the intermedia implications of these regulations were not adequately considered. An adverse result of controlling the discharge of electroplating effluents into surface waters was that a large amount of these wastes was diverted nationwide to municipal sewage systems, and the inadequately treated sludge with high toxic metal content was either dumped into the ocean or on land (with a potential for surface- and ground-water contamination).

The above problem exemplifies one of the findings of Chapter II, namely, that EPA's problems in the area of toxics control partly stem from the media-specific nature of most environmental legislation. Because of this circumstance, a well-coordinated and integrated approach to toxics management is of special importance. As was pointed out in Chapter III,

one of the characteristics of an integrated approach is that residuals and by-products of controlling toxics in one medium are explicitly considered. The Task Force on the electroplating industry has concluded that the Agency is aware of the intermedia repercussions of controlling industrial surface water effluents and is already doing something about them. For comprehensive regulation of electroplating discharges, EPA now has the authority to control land disposal of sludges through the recently enacted Resource Conservation and Recovery Act. In its current effort to comply with a consent decree, under which effluent limitations and pretreatment standards must be developed for 21 industry categories, the Agency is developing the required regulations with full consideration of the associated sludge problem, through coordination with the Office of Solid Waste.

The proposed approach for integration of toxics management would provide a forum where intermedia pollutant transfer problems, similar to the one illustrated here, could be discussed and thoroughly analyzed. The public health and environmental impact as well as the economic costs associated with the various control options would be carefully considered. The Agency's decision to adopt a particular regulatory option would be taken only after the various tradeoffs required for an integrated management approach have been made.

3. Northern New Jersey

The Task Force selected and profiled two adjacent counties of high industrial concentration and population density: Union and Middlesex.

Existing EPA files in the study area were investigated to identify probable sources of toxic pollutants; however, no attempt was made to establish a link between the area's environmental problems and its reported high mortality rate, as reflected in statistics on cancer and other diseases.

The Task Force recognized several deficiencies in EPA's existing program with respect to toxics management in the study area. Perhaps the most serious shortcoming lies in the lack of adequate data base for hazard assessment. The problem posed by the scarcity of information is compounded by its outdated quality and difficulty of retrieval. About 2,100 industrial facilities were surveyed in the two counties. Of these, only one-third are covered in EPA files, although a significant portion of the remainder emit toxic substances to the environment. The lack of adequate information on toxics was also illustrated by the scarcity of ambient air quality data for other than criteria pollutants, although at least 20 percent of all facilities surveyed were considered potential sources of toxic substances. Data from the NPDES files were limited primarily to 1971 applications. Effluent limitations and monitoring requirements were limited primarily to chromium and zinc. Most of the data compiled by the Task Force had to be sorted out manually from miscellaneous sources.

Another significant finding of the Task Force was that about 50 percent of all industrial wastewater in the study area, containing substantial amounts of toxic substances, are discharged in an untreated condition to municipal wastewater treatment facilities, where they do not receive adequate treatment prior to ocean dumping or land disposal.

The study also confirmed the problem that has been emphasized in Chapter II of this report: the general lack of health effects data. For example, it is exceedingly difficult to estimate the risk to public health posed by those toxic substances that have been identified in the ambient air at certain concentrations. Also, the cancer mortality data do not allow the establishment of a cause-effect relationship because of a large number of complicating factors, such as the long latency period for cancer and the myriad of potential environmental causes.

The integrated toxics management approach advocated in this report would alleviate some of the problems identified in the Northern New Jersey study. The Agency's information-gathering and hazard assessment capabilities would be significantly improved by the proposed staff office, which would systematize the collection, storage, and retrieval of toxics data. This staff office would help identify significant data gaps and recommend the monitoring of certain toxics which presently seem to be emitted to the environment without control. If a potentially serious problem is identified by the monitoring effort, the problem could be placed on the threat list and the Agency action priority list. Through such a procedure, the primary goal of the recommended toxics management system could be approached: anticipation of toxics problems before they become critical.

The staff office for toxics program integration would initiate and manage special fact-finding projects similar to the Northern New Jersey study. Major conclusions from such projects (e.g., the finding in this study that 50 percent of industrial effluents are discharged into sewers without pre-

treatment) would be channelled routinely to the Agency's policy decision-makers for consideration.

The Task Force concluded that employing a "geographic approach" as part of an integrated toxics management strategy (i.e., performing studies similar to the one in Northern New Jersey) would be a valuable tool for defining and assessing environmental health problems. However, it concurred with the Work Group's recommendation that only pollutant-specific and industry-specific approaches be used for the establishment of Agency priorities.

Management plans with recommendations for specific actions on N-nitroso compounds, the electroplating industry, and Northern New Jersey are currently being prepared by the respective Task Forces. The three full reports on these special problems will be issued under separate cover at a later date.

Appendix A

Suggested Principles for Ranking Toxics Problems

Because of the subjective component inevitable in any ranking of the relative importance of environmental toxicants, it is essential to state explicitly the broad principles used in making these judgments. There are two general types of principles for evaluating the risk associated with changes in the environment. These principles are: (i) principles for ranking human health effects, and (ii) principles for ranking environmental effects.

The underlying premise which guides the stipulation of principles for ranking health and environmental effects is: the importance associated with human health or environmental effects is proportional to the magnitude of the impact experienced by both human and non-human populations. To assess the magnitude of the impact, it is necessary to estimate and make trade-offs among the levels of exposure, the number of persons exposed (in the case of human health effects), as well as the degree of disability or damage expected.

Although some of the principles which follow might be given greater weight than others, they are not listed in order of their relative importance. The importance of the human health and environmental effects may be proportional to all or some of the following variables:

Human Health

- o The number of persons expected to experience the disability or are susceptible to such a disability.

- o The disabling capacity of the health effect—for example, an effect on the reproductive function is obviously more important than an irritant effect.
- o Man-years lost due to premature death or permanent disability.
- o Degree of irreversibility of the health effect.
- o Duration of reversible impairment.
- o Potential to induce a serious health effect such as death or permanent disability.
- o Potential to induce or cause intergenerational health effects.

Environmental Effects

- o Effects on organisms which fill critical ecological roles such as algae (primary producers) and fungi (decomposers). These organisms are particularly significant since alterations in their number and diversity can lead to substantial perturbations of the biological community.
- o Effects on the biogeochemical cycles of important nutrients.
- o Effects which impair or alter reproductive functions of wildlife species.
- o Environmental changes which may lead to alterations in climate patterns. Such changes exhibit a low potential—however, not zero—for catastrophe.
- o Geographic extent of environmental effects.
- o Degree of irreversibility of the adverse effect.
- o Economic and social significance of environmental changes. For example, an effect which may lead to alterations in agricultural and/or forest species would be very serious.
- o Amounts of energy, food, natural resources and other amenities which

- would not be available as a result of changes in environmental quality.
- o Effects which may place stress upon the populations of endangered species.

Appendix B

Guidelines for Selecting the Action Priority List

To identify the toxics problems which receive Agency-wide attention, it will be necessary to strike a balance among the perceived threats to health or the environment, the non-toxics demands placed on the program offices, and the public interest. While a list of guiding principles for making these judgments cannot be explicitly stated, it is clear that good management practices urge the adoption of a cost-effectiveness approach for the distribution of limited EPA resources. To select toxics problems for the Agency action priority list and for program action lists it will be important to consider in addition to the specification of the hazard each of the following factors:

1. Amenability to control
2. Cost-effectiveness of EPA action
3. Immediacy of the problem
4. Current program priorities
5. Public interest in toxics problem

For the first three categories, a series of questions will be presented that should be addressed when selecting problems deserving Agency attention. The last two categories are discussed in Chapters IV and V of the Report.

Amenability to Control

A. Controllable Actions: Does EPA have the authority to take actions which can influence the distribution of the toxics problem in the environment?

B. Intentional Effluents and Unintentional Effluents: Is the toxic material due to fugitive or direct effluent sources? Does the toxic material represent a quality control problem, is it a by-product of the process, found in the waste stream, or an active ingredient of the process?

Cost-Effectiveness

A. End Uses: Can the various use categories which emit the toxic pollutant be separated into dispersive and non-dispersive uses? Can selective regulation of end uses significantly limit the health hazards?

B. Substitutes: What is the total economic significance of the product or process which causes the toxics problem? Are the substitute products available in similar quality? Can the process be "reformulated" to produce process streams without the toxic effluents?

C. Research/Regulatory Issues: Does an adequate basic knowledge data set exist which can fill information gaps that influence decision-making? Can unanswered questions be resolved with a practical amount of time and resources?

D. Feasibility of Meeting a Standard: Can the cost of pollution abatement equipment and compliance with a standard be roughly estimated by comparison to similar situations where detailed cost analyses have been completed? If the toxics problem is chemical in origin, is the substance a new or an existing chemical? Existing chemicals have established markets and the cost of regulation can generally be expected to be higher.

E. Reduction in Hazard per Dollar Spent: Using a rough estimate of the cost and the likely reduction in release to the environment, a rough calculation can be made relating costs to hazards reduced. This estimate can be used for comparative purposes for selecting the high yield toxic problems.

Immediacy of the Problem

Are the environmental consequences expected in the near term or long term? Can short-term research results provide information to fill the data gaps or is a long-term research program needed to significantly alter the state of knowledge?

Appendix C (continued)
Summary Comparison of Toxics Management Approaches

MANAGEMENT APPROACHES →	#1	#2	#3	#4	#5	#6
CONTROL FUNCTIONS ↓	STATUS QUO	INFORMATION OFFICE	INFO. OFFICE & ACTIVE COORDINATION	CENTRALIZED INFORMATION GATHERING	TOXICS PROGRAM INTEGRATION	CENTRALIZED TOXICS MANAGEMENT
Emergency Response	By program offices. Integration on an <u>ad hoc</u> basis	→	Integrated response to emergencies formulated by EPA staff office	→	→	Centralized files maintained
Information Gathering	By each program office. Some duplications of effort and omissions.	#1, with reduced duplications and omissions	→	Centralized files maintained #2		Centralized files maintained
R & D	By ORD and regulatory program offices. Insufficient adherence to needs and priorities	#1, with benefit of info. about ongoing toxics activities	Revised priorities suggested by EPA staff office	→	Revised priorities reviewed and approved by appropriate decision-makers	Research priorities recommended by AATS
Monitoring	Individually by media offices, ORD, OE, and Regions.	→	Revised priorities suggested by EPA staff office	→	Revised priorities reviewed and approved by appropriate decision-makers	Monitoring priorities recommended by AATS
Rulemaking	1000.6 approach. Coordinated, but not integrated.	→	Integrated regulatory approach suggested by EPA staff office	→	Integrated approach reviewed and approved by appropriate decision-makers	Centralized for toxics

Appendix C (continued)
Summary Comparison of Toxics Management Approaches

MANAGEMENT APPROACHES →	#1	#2	#3	#4	#5	#6
CONTROL FUNCTIONS ↓	STATUS QUO	INFORMATION OFFICE	INFO. OFFICE & ACTIVE COORDINATION	CENTRALIZED INFORMATION GATHERING	TOXICS PROGRAM INTEGRATION	CENTRALIZED TOXICS MANAGEMENT
Enforcement	Enforcement strategy developed and implemented by OE					
Regional & Federal Agency Coordination	Rather ineffective	Improvement over #1, but still passive	Active			
Public Participation	As mandated by media legislation				Active public participation in priority establishment	
Overview Activities	None	None	By EPA staff office		#3, with provision to ensure corrective action	By OTS, with provision to ensure corrective action

Appendix D

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