

CHAPTER 2

PRINCIPLES FOR ENVIRONMENTAL CLEANUP OF FEDERAL FACILITIES

Introduction

In August 1995, the Committee released fourteen principles it felt should be the basis for making federal facility cleanup decisions and should apply to all persons and institutions involved in this process. The Committee offers further clarification and elaboration of its fourteen principles for environmental cleanup of federal facilities in this chapter. The Committee offers the principles as a foundation for its specific recommendations stated in the subsequent chapters of this report. The principles are designed to be complementary of one another. They are listed here in an order that strengthens their reinforcing nature rather than in an order of priority.

The Principles

1. Nature of the Obligation—The federal government has caused or permitted environmental contamination. Therefore, it has not only a legal, but an ethical and moral obligation to clean up that contamination in a manner that, at a minimum, protects human health and the environment and minimizes burdens on future generations. In many instances, this environmental contamination has contributed to the degradation of human health, the environment, and economic vitality in local communities. The federal government must not only comply with the law; it should strive to be a leader in the field of environmental cleanup, which includes addressing public health concerns, ecological restoration, and waste management.

The federal government's duty to clean up environmental contamination at federal facilities rests on widely shared moral and ethical values. These values form the basis for the legal requirements in statutes, regulations, treaties, and other governmental acts and agreements. In developing principles guiding the cleanup of federal facilities, the Committee felt it was important to go beyond the reliance on current legal structures; it was necessary to affirm the shared moral and ethical beliefs that provide the foundation both for our society's legal framework and for the Committee's recommendations.

First, governments have an obligation to protect the general welfare, including public health and safety. A government's legitimacy rests on providing security which would otherwise be lacking in its absence. Pollution threatening public health and the environment creates an

obligation for the federal government to ensure threats are addressed. The federal duty to act is heightened when the threat is a result of activities at or associated with a federal facility.

The federal government also has a stewardship responsibility to protect the lands that it owns or manages on behalf of the nation. Such stewardship means short and long term management of federal facilities to protect natural resources. The federal government is given such land in trust on behalf of the nation, and where threats to the environment exist on federal land or are posed by federal activities, the contamination should be addressed.

Stewardship also means protecting the land for future generations. Delaying the environmental cleanup at federal facilities passes on an environmental debt to future generations that threatens their security. The federal government must be responsible for the consequences of its actions, particularly when the threats of those actions extend into the future. It would be unethical to pass problems onto our children if we can reasonably resolve those problems today.

The cleanup of federal facilities raises an issue of fairness with regard to the cleanup of private property. The federal government must live up to the same environmental standards it requires of the private sector. Since the federal government requires cleanup of environmental contamination, it would diminish the moral authority of the federal government not to be bound by the same laws and cleanup requirements.

Finally, the federal government bears an ethical burden on behalf of the communities that host federal facilities. Some of the most significant contamination is at facilities that contributed to the national security during World War II and the Cold War period that followed. Activities such as weapons production and testing were characterized by secrecy and urgency. As a result, communities made sacrifices they were not even aware of at the time. These communities served the nation and cannot be ignored now. The powers of the federal government must be used to remedy these past actions. The obligation to the communities is especially important where the government closes the facilities, potentially creating economic hardship in addition to whatever environmental impacts have been imposed on the community.

2. Sustained Commitment to Environmental Cleanup—The federal government must make a sustained commitment to completing environmental cleanups at its facilities at a reasonable and defensible pace that is protective of human health and the environment and allows closing federal facilities to return to economic use as promptly as possible .

The federal government should meet its obligations by making a sustained commitment to a credible program of environmental cleanup. A sustained commitment can be measured by an unwavering effort to fund and efficiently manage programs reducing human health risks and restore damaged environments.

The Committee recognizes that many of the risks posed by federal facility contamination are long-term risks. Substantial fiscal impacts may be associated with trying to achieve

permanent cleanup goals in the short-term. Thus, the Committee agrees it may be necessary to take time to complete the job, provided containment, isolation and life cycle costs are properly considered.

In instances where a technological solution has not emerged, a sustained commitment can be measured by the ability to achieve quickly interim containment measures that are protective of human health and the environment and, at the very least, prevent a problem from developing, getting worse, or increasing future costs. The commitment is also measured by programs that include significant resources devoted to technology research and development aimed at finding long-term solutions.

A sustained commitment is necessary to build and maintain partnerships among the agencies that caused or are responsible for cleaning up the contamination, regulators responsible for overseeing the cleanup, and affected communities. In the absence of a sustained commitment, regulators and communities may believe they have no choice but to insist upon expensive remedies now, instead of interim remedies, monitoring with contingency plans, and focus on developing new technologies.

A sustained commitment is contrasted with the boom/bust inefficiencies resulting from major swings in the rate of expenditures for cleanup obligations (e.g., layoffs and rehiring of workers, inability to complete jobs that have already begun, need for ongoing maintenance of facilities or buildings that could be decommissioned after being cleaned up).

3. Environmental Justice¹—The federal government has an obligation to make special efforts to reduce the adverse impacts of environmental contamination related to federal facility activities on affected communities that have historically lacked economic and political power, adequate health services, and other resources.

For many communities of color, indigenous peoples, and low-income communities, federal facilities and their environmental impacts present additional burdens on communities struggling for social, economic, and political viability. Therefore, in order to achieve environmental justice, efforts should be made to identify and address adverse human health or environmental effects from federal facility contamination on communities of color and low-income communities.

At the core of an environmental justice perspective is the recognition of the interconnectedness of the environment to the overall economic, social, human, and cultural health of a community. To this end, cleanup in these communities is fundamental to addressing a broader set of community needs.

¹See Box 27 for a definition of "environmental justice" and information regarding Executive Order 12898.

4. Consistency of Treatment Between Federal Facilities and Private Sites—Federal facilities should be treated in a manner that is consistent with private sector sites, especially in terms of the application of cleanup standards.

Many environmental contamination problems found at federal facilities are similar to private sector sites, with the notable exception of some of the technical problems being faced at former nuclear weapons production facilities. Although federal facilities are similar in many respects to private sector sites, it is important to recognize that no company has Congress, the President, or the Office of Management and Budget determining the appropriate level of funding for its cleanup activities as well as the requirements for conducting cleanups. Although this creates a unique situation, in that the federal government can change the laws, it does not mean that the federal government and its facilities are above the law. Federal facilities should be subject to the same treatment and cleanup standards for similar situations as private sector sites. In other words, cleanup standards should be neither lower nor higher at federal facilities than at private sector sites.

The federal government should take federal cleanup and compliance responsibilities seriously (e.g., by not lowering standards for federal facilities), or the worst possible signal will be sent to the private sector and local and state governments facing similar cleanup responsibilities. It would be tantamount to the federal government declaring, "Do as I say, not as I do."

5. Cleanup Contracting—Federal facility environmental cleanup contracts should be managed as efficiently as possible by using contract mechanisms that specify, measure, and reward desired outcomes and efficiencies rather than simply reimburse for effort or pay for an end product. Federal agencies should strive to ensure that cleanup contracts and employment opportunities benefit local communities, particularly those that are lacking economic resources and have been disadvantaged by contamination. Contractors and agencies responsible for cleanup should work in partnership with local communities to achieve cleanup goals.

More efficient approaches to cleanup and to the contracting and funding arrangements used by the federal government for conducting environmental cleanup, in particular, are needed. Given the significant role that contractors play in federal facility cleanups for some agencies, especially in developing proposals for specific cleanup activities, agencies should, whenever and wherever possible, provide adequate resources to improve management oversight of contracts and reform contracts so they provide incentives for efficient, safe, and cost effective approaches to cleanup. So far as permitted by federal acquisition law and policy, the government must track key measures of past performance and use past performance in the selection of future contractors.

Of the various contracting mechanisms available, contracts that specify, measure, and reward desired outcomes and efficiencies are preferable to those that simply reimburse for effort or pay for an end product. Contract language should provide clear incentives to complete cleanup projects early and under budget and to use innovative technology.

In striving to ensure that cleanup contracts and employment opportunities benefit local communities, especially those that are lacking economic resources and have been disadvantaged by the contamination, contractors and federal agencies responsible for cleanup should consider working in partnership with local communities to achieve cleanup goals. Such partnerships may include but are not limited to job training, career development activities, business development and mentoring, and contract and job awards.

6. Fiscal Management—Funding mechanisms for cleanup should provide flexibility in the timing of expenditures and ensure that cleanup activities are conducted in a manner that is as efficient as possible.

Limitations and constraints currently placed on how the funds allocated to environmental cleanup can be used also foster inefficiency and waste. In general, funds must be spent within the year or years of their appropriation. Even when appropriations span several years, as with the DOD's Base Realignment and Closure Account, or when appropriations are made on a "no year" basis (i.e., they are available until expended), as is the case with the DOE's environmental management appropriations, agencies are pressured to "use it or lose it." In addition, agencies are pressured to expend "end-of-the-year" money in order to avoid receiving less funds in the next cycle. Agency staff therefore sometimes feel an urgency to spend all appropriated money. As a result, agencies and others, including Congress, tend to measure performance by obligation rates rather than cleanup results. This results in putting funds "on contract" simply to create favorable obligation rates. Contractors then may produce bids to match allocated funds, which may result in a higher use of labor and material than is absolutely necessary to complete the project.

Cleanup differs from other agency programs in at least two key ways. First, for major sites it is almost impossible to know the full or precise extent of requirements at the time budgets are built, since investigation and remediation activities frequently result in additional knowledge that often significantly affects the course and timing of future activities. Second, since regulators and the public are consulted at each step in the process, timetables are subject to continued but legitimate revision based on input received. Consequently, when pressured to obligate funds when high-priority projects are not quite ready for action, departments fund lower-priority activities or face funding cutbacks. To promote sound management, funding schemes for cleanup should recognize the need for flexibility in both the quantity and timing of actual expenditures.

7. Interdependent Decision-Making Roles and Responsibilities—Numerous institutions and people play very distinct and important roles in the decision-making process for federal facility cleanups. These include facility level managers, national program managers, financial officers, and cabinet officials within the agencies responsible for conducting the cleanup; federal, state and tribal regulators; tribes as sovereign nations; local governments; local, state, tribal, and federal health officials; public stakeholders; and the President, Office of Management and Budget, and Congress. These roles are highly interdependent, reflecting both the site-specific and national dimensions of the federal facility environmental cleanup problem. The decision-making process must

ensure that all of these roles are preserved and balanced if our nation is to complete the mission of cleaning up federal facilities in an efficient, equitable, and timely manner.

The Committee believes it is necessary to recognize that federal facility cleanups involve several important and distinguishable, yet interdependent, decision-making roles that reflect both the site-specific and national dimensions of the problem. In many instances, they can be characterized as shared decision-making roles. In this section the Committee outlines its view of the appropriate role that we believe all key stakeholders should play.

Facility level managers need to exercise judgments about the relative priority and timing of cleanup activities at the facility level, but it must be recognized that they cannot do so in a completely independent fashion. In exercising such judgments, their primary concern should be to develop and maintain a credible, cost efficient environmental program aimed at completing cleanups at a reasonable and defensible pace. In particular, prior to completing negotiations on enforceable agreements with federal, state and tribal regulators, facility managers must be confident that the commitments they are entering into are implementable and are likely to achieve the desired goals and contribute significantly to the cleanup effort. Second, it should be acknowledged that the level of resources made available to facility managers is largely, although not completely, beyond their control. Nevertheless, facility managers have the primary responsibility, consistent with the requirements of Executive Order 12088², to advance and advocate proposals within their department and with other key decision makers and stakeholders, about what constitutes a reasonable, credible and legally compliant environmental cleanup program at the facility for which they are responsible.

National program managers from within the federal agencies responsible for conducting cleanups have at least three important roles. First, prior to signing or approving enforceable agreements with federal, state and tribal regulators, national program managers must carefully consider the impacts of each of the agreements on their program from a national perspective. They have the primary responsibility for ensuring that the cumulative commitments in facility level agreements are manageable from a programmatic perspective that includes the budgetary aspects of national programs.

Second, after signing or approving enforceable agreements, as with facility level managers and consistent with the requirements of Executive Order 12088, national program managers are responsible for advancing funding proposals that will ensure their agencies can meet their obligations and commitments. National program managers should advocate these proposals both within the Executive Branch and with other stakeholders. However, the Committee acknowledges that although national program managers have more influence over the level of resources that are made available to accomplish their mission compared to facility level managers, such decisions are still not completely within their control.

²Executive Order 12088, among other requirements, requires federal agency department heads to submit budget requests to the President that will allow them to meet their legally mandated pollution control requirements, including cleanup.

As discussed in Chapter 5, national program managers play an important role in addressing the tension existing between the requirements of Executive Order 12088 to submit budget requests allowing their agencies to meet their legal obligations and the requirement to submit funding requests within the limits of specified budget targets.

Third, after appropriations are made by Congress, national program managers are responsible for apportioning funding to intermediate organizational levels where appropriate (e.g., military commands), and facilities within their program in a manner that sustains the protection of human health and the environment. The allocation for cleanup should be made in a manner consistent with the approaches recommended in Chapter 5.

Agency Financial Managers and Comptrollers play an important role in some agencies in balancing the mission and other requirements of their agency with the resources available. In particular, financial managers wield great influence, and in many cases, the authority to determine the level of resources to be applied to agency cleanup programs. These financial managers are usually not very visible to stakeholders. In many cases, such managers believe that if their agency's primary mission requirements exceed the current and projected resources available, it is their job to determine and recommend to agency heads which requirements should not be funded. In addition, financial managers have become understandably alarmed at the continued growth of cleanup requirements as a percentage of agency budgets. Nonetheless, it should be recognized that cleanup programs are somewhat different from many other programs in that such requirements are often externally driven and therefore a top down priority system does not sufficiently account for such requirements. It is understood that risk assessments or relative risk evaluations are only one factor in building agency budgets for cleanup projects. Thus, most but not all projects funded first will be of high priority.

Cabinet-level officials at federal agencies responsible for conducting cleanups, consistent with the requirements of Executive Order 12088, are responsible for submitting funding requests that will permit their departments to meet the legally binding commitments they have entered into through negotiated agreements or are otherwise required by statutes and treaties. These officials should advocate proposals that constitute a credible environmental cleanup program aimed at completing the cleanup mission at a defensible and reasonable pace while protecting human health and the environment.

Similarly to national program managers, the Committee recognizes that cabinet officials are increasingly faced with the tension between the requirements of Executive Order 12088 and the requirement to submit funding requests within the limits of specified budget targets. The Committee agrees that Cabinet level officials have a critical role to play in attempting to balance federal facility cleanup obligations with other important societal needs and obligations that fall within their departmental programmatic purview. However, such balancing must always consider the nature of the federal facility environmental cleanup obligations in terms of its legal basis, ethical dimensions, and the effect of federal facility priority-setting decisions may have on cleanup decisions taking place in the private sector.

The President and the Office of Management and Budget (OMB) play a role that is separate and distinct from the roles that the various agencies of the federal government play as either responsible parties or as regulators. The principal feature of this role is to ensure that the nation as a whole maintains a sustained commitment to a credible program aimed at achieving cleanup objectives over a reasonable period of time and in a manner that is protective of human health and the environment. In so doing, the President and OMB play a critical role in attempting to balance federal facility cleanup needs and obligations with other important societal needs and obligations. Such balancing must always consider the nature of the federal facility cleanup obligations, in both their legal and ethical dimensions, as well as the impact of federal facility priority-setting decisions on cleanup activities taking place in the private sector. Both the President and OMB play essential roles in recognizing that federal facilities are subject to the same laws and regulations as private sector sites. Finally, in keeping with the spirit of executive orders applying to the departments of the Executive Branch, the President and OMB play perhaps the most essential role in ensuring that department-specific budgets and budget targets are set in a manner that allows departments to meet the legally binding commitments they have entered into through negotiated agreements or are otherwise required by statutes and treaties and sufficient to sustain a reasonable and defensible pace of cleanups that is protective of human health and the environment.

Congress, similar to the President, plays a critical role in ensuring the nation as a whole maintains a sustained commitment to a credible environmental program aimed at achieving federal facility cleanup objectives over a reasonable period of time and in a manner that is protective of human health and the environment. This role includes the oversight responsibilities Congress has in monitoring the performance of federal agencies. In addition, in authorizing and appropriating agency budgets, Congress must also balance federal facility environmental cleanup needs and obligations with other important societal needs and obligations. In so doing, Congress must also recognize the critical importance of treating federal facilities in a manner that is consistent with how private sector sites are treated, especially as it relates to any changes contemplated in the laws that define the decision-making authorities of other levels of government, as well as the consistent application of cleanup standards.

State, tribal³, and federal regulators need to exercise judgement about whether the federal cleanup actions being proposed or taken to address site-specific problems are protective of human health and the environment and result in a reasonable pace of progress toward completing the overall goal of cleaning up the site. Regulators have primary responsibility for setting cleanup standards, concurring with or selecting remedial actions, and determining whether the cleanup effort is proceeding at a pace protective of human health and the environment. In determining the appropriate pace of cleanup, regulators should consider the risk plus priority-setting factors discussed in Chapter 5. Regulators also have an obligation to work together with other regulators and regulated agencies to minimize imposing differing,

³ Tribal regulatory authority stems both from inherent tribal sovereignty as it relates to environmental contamination caused by the federal government on affected tribal lands and in some instances, through delegation of federal regulatory programs to tribes.

inconsistent, or conflicting requirements and to encourage efficient and cost effective cleanups. Regulators should participate proactively in the community involvement process to improve the overall federal facility cleanup program. In addition, regulators have an important role in exercising their enforcement authorities.

Tribal governments, in addition to their possible role as regulators, have a distinct decision-making role to play as that is derived from rights that are specified in treaties with the U.S. Government. In some instances, these treaty rights may result in legally binding obligations on the part of the U.S. Government that must be accounted for during the conduct of federal facility cleanup activities. Typically these interests will pertain to hunting, fishing, and religious freedom rights on ceded lands upon which there exists a federal facility. Tribes may also have a role that is derived from the rights and privileges that are specified in such statutes as the Historic Preservation Act, the Antiquities Act, the American Indian Religious Freedom Act, and other aspects of the trust relationship between tribes and the U.S. Government. This may include the rights and privileges of individual Americans, including urban Indians, indigenous peoples, and members of unrecognized tribes. With regard to advisory boards, The Committee believes that these government-to-government relationships are consistent with and should encourage participation of Tribes in advisory boards, and recognizes the right of each Tribe to make its own determination on this matter.

Local governments, including counties, cities, towns, special assessment districts, municipal utility districts (such as water and sewage), have at least three important roles to play in the context of federal facility environmental restoration. The first is similar to federal, state and tribal regulators in so far as local governments have a general obligation to protect the health, safety and welfare of their citizens as well as the environment where they live. One of the primary manifestations of this role is the fact that local governments very often serve as first responders in emergency response situations. The second role is as an institution of government that has historically had primary responsibility for land use determinations for lands within their jurisdiction. Therefore, in instances where federal land is transferred to a non-tribal local community, local governments are usually the institutional authority that will determine and regulate the land use. Third, local governments have a general responsibility to ensure the overall economic and social well being of their citizens. The participation of local governments in cleanup decision-making processes should be accommodated through direct inter-governmental consultations, exercise of local regulatory authority such as land use planning, and through participation with and involvement in advisory boards. Consistent with Principle 11, local government authority for land use decisions should be exercised independently of cleanup standards.

Because a facility may affect several local governments, expectations for their role in the cleanup decision-making processes should be discussed at the facility level among the regulated agency, the regulating agencies, local government officials and public stakeholders, consistent with the recommendations in Chapter 6.

Local, state, tribal, and federal health officials need to evaluate, make recommendations, and where necessary take appropriate actions to respond to the human health impacts of past,

present, and potential future releases of contaminants. These officials should recognize that, in some instances, the environmental/ecological impact of contaminants may be the determining factor in cleanup actions.

Public stakeholders have a central and independent role to play at the core of the decision-making process. This role should be addressed by the establishment of such mechanisms as advisory boards, as well as by other effective and meaningful approaches to community involvement. While public stakeholders play many important roles, it should be explicitly stated that such stakeholders must play an important role in remedy selection and overall priority setting of cleanup activities. It is important to ensure, not merely allow, meaningful participation by affected people and communities of color and other historically disempowered stakeholders. Indigenous peoples, urban Indians, grass roots tribal organizations and unrecognized tribes who are affected by federal facility contamination have an important role to play as public stakeholders that is independent from Tribal governments in that the federal government's trust obligations extends to individual members of tribes and not just the Tribal government.

8. The Role of Negotiated Cleanup Agreements—Negotiated cleanup agreements in many instances play a critical role both in setting priorities at a facility and providing a means to balance the respective interdependent roles and responsibilities in federal facilities cleanup decision making.

Federal facility cleanup is changing from an adversarial situation riddled with mistrust that slowed, if not paralyzed, cleanup progress, to a dynamic arrangement in which different stakeholders work together to achieve common goals. The Committee believes that negotiated cleanup agreements can and should continue to play an important role in this shift and thereby increase consideration of the concerns of both local and national level stakeholders.

Recently, reports have been issued criticizing the role of negotiated agreements in cleaning up federal facilities. These criticisms have asserted that they are "unwieldy" and frequently contain "unrealistic schedules" with cleanup milestones extending years or decades into the future. The Committee recognizes that developing an integrated cleanup plan for a huge facility like the DOE's Hanford facility is a monumental task. Rejecting a cleanup agreement as an approach to managing cleanup for such a facility because the agreement is "unwieldy" does nothing to simplify the task of cleaning up the facility. While the Committee acknowledges some agreements have worked better than others, and improvements can be made in implementing some of the agreements, the Committee disagrees with the view that negotiated agreements are, on the whole, unworkable. Therefore, the Committee attempts to address criticisms of negotiated cleanup agreements and the tension between the importance of negotiated cleanup agreements and the requirements of the federal budget process in the recommendations on "Budget Consultation and Milestone Setting" that are found in Chapter 5. When negotiated and executed in good faith, the Committee believes negotiated agreements can provide a good vehicle for setting cleanup priorities at individual facilities. To achieve this goal, negotiated cleanup agreements should be developed in consideration of

risk plus other factors described in Chapter 5, including the anticipated availability of cleanup funds. The Committee believes that these agreements typically are not and should not be developed in an unconstrained manner.

The Committee believes that the level of external regulatory oversight of federal facility cleanups necessary to ensure a credible and effective cleanup program will depend on the nature and extent of environmental contamination or hazard at any site. In addition, federal facilities on the Superfund National Priorities List (NPL) are required under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA) to enter into "interagency agreements" setting out schedules for cleanup. The Committee also recognizes not all federal facilities are required to enter into such agreements in all circumstances, nor would it make sense for them to do so.

Negotiated agreements can provide an effective means to integrate state and federal cleanup authorities without resorting to expensive and lengthy litigation. Where a state's RCRA and EPA's CERCLA regulatory authorities overlap, as they do at many federal facilities, a negotiated agreement can provide a mechanism to coordinate those authorities to minimize differing, inconsistent, or conflicting requirements over matters within their jurisdiction, and, where appropriate, to identify a lead regulatory agency. As noted in Principle 13, the Committee believes an integrated approach to cleanup can greatly improve the quality and implementation of cleanup plans.

The very process of negotiating an agreement allows the parties to the negotiation to ensure their concerns and priorities are raised and addressed in the agreement. For example, federal agency negotiators can raise concerns about proposed schedules, their impact on agency budgets, and any other concerns they may have. The Committee believes it is the responsibility of each party to an agreement to raise and resolve such concerns prior to signing an agreement. This includes the responsibility of the regulated agency to provide information as fully as possible to the regulators and public stakeholders regarding budget and out year funding availability.

The Committee believes it is the responsibility of the parties to an agreement to ensure the schedules they negotiate are achievable and implementable before signing the agreement. In this regard, the Committee believes the parties to a cleanup agreement should consider several factors when negotiating cleanup schedules, such as:

- a) the logical progression of work at the facility;
- b) changing priorities resulting from new information;
- c) regulator and federal agency resources; and
- d) the likely availability of funding in any given year.

Finally, the processes and structures established in negotiated agreements offer opportunities for meaningful public involvement in cleanup decisions (see Principle 14). These processes can and should serve as a vehicle for reconciling competing public stakeholder values and concerns.

9. Consideration of Human Health and Environmental Risk and Other Factors in Federal Facility Environmental Cleanup Decision Making—Risk to human health and the environment is an important and well established factor that should continue to be a

primary consideration in federal facility cleanup decision making, including setting environmental cleanup priorities and milestones. However:

A) Human Health and Environmental Risk—Risk assessments and other analytical tools used to evaluate risks to human health (including non-cancer as well as cancer health effects) and the environment all have scientific limitations and require assumptions in their development. As decision-aiding tools, risk assessments should only be used in a manner that recognizes those limitations and assumptions. Moreover, risk assessments ought not be used by any party as a basis for unilaterally setting aside legal requirements that embody public health principles and other important societal values.

The Committee believes that a primary goal of federal facility cleanups is the protection of human health and the environment. Given this goal, one of the principal benefits of cleanups is the reduction of risk to human health and the environment. The Committee further believes that risk assessments and other analytical tools that evaluate the human health and environmental risks posed by contamination, as well as the human health and environmental risk reduction potential of proposed cleanup actions, are useful. However, these tools all have limitations that must be recognized in their utilization.

All Committee members acknowledge the shortcomings of risk assessments and related analytical tools. Some Committee members feel that affected communities in general, and low-income communities and communities of color in particular, have been adversely affected by the use of risk assessments. For example, in some cases, exposure assessments have not accounted for the unique dietary habits and lifestyles of native peoples and communities of color. These Committee members believe that the scientific and technical limitations of risk assessments are so severe that they should be used sparingly, if at all. These Committee members believe risk assessments are so fraught with ambiguity that they have often been misused or abused.

Furthermore, these same Committee members believe that the identification of arbitrary risk-based human health and environmental "protection" levels (i.e., so-called "acceptable" risk levels), which often provide the justification for undertaking risk assessments to begin with, can be criticized on both moral and ethical grounds. These Committee members believe when used in this manner, risk assessments tend to result in the imposition of risks to human life on specific populations while the benefits tend to be more widespread and usually do not accrue to the populations that are placed at risk.

Other Committee members have more faith in the utility of risk assessments when used consistently across an agency, in a manner that recognizes their limitations and when public stakeholders understand their proper use and function. These Committee members believe although not perfect, risk assessments provide valuable information that can help determine both whether and when a cleanup action should be taken. These Committee members believe that without this information, efforts to set priorities for cleanup actions would be chaotic.

Notwithstanding these differing views, all Committee members recognize risk assessments are currently being used, and will continue to be used, in cleanup decision making. All Committee members believe some of the more significant limitations of risk assessments include the failure to recognize multiple and cumulative exposures or distinguish between voluntary and involuntary risks, and man-made and natural risks. The Committee also believes risk analysts tend to focus on the probabilities of harm, whereas affected communities tend to focus on the nature and consequences of that harm. The outcome of these different approaches is often disagreements about the meaning of risk assessment results, as well as the implications of such results for public policy decisions.

The current focus on the use of risk assessments as a policy-making tool has left the impression it is a powerful tool based on scientific evidence and good data. This is often not the case. Risk assessments therefore often create an illusion of scientific knowledge and certainty. The data used to produce risk assessments are often limited and, in any case, must be subjected to interpretation. Moreover, the assumptions used are often the subject of intense scientific debate. The manner in which risk assessments are developed, communicated and utilized often does not consider that many individuals do not have, or are not provided with, information about how the assumptions are developed, the quality of the data used, and how the data and assumptions are used to produce the estimate of risk.

Risk-based cost benefit analyses, sometimes referred to as risk benefit analyses, often fail to capture all of the possible future economic costs and benefits associated with various levels of remediation efforts. For example, partial or inadequate remediation efforts can impose long-term costs that are passed on to an affected community in the form of lost future economic and social potential. This lost potential can be manifested not only in the loss of direct development of the affected areas but in the overall perception that the community's quality of life has been permanently compromised—thus discouraging a variety of activities important to the vitality of communities (e.g., siting new businesses, recreation, tourism). In addition, it is not possible to reduce all of these values to a monetary value as risk benefit analysis requires. All stakeholders should take responsibility, through the advisory board and other mechanisms, to ensure that costs and benefits are identified and included in the analysis to the extent possible.

The Committee is concerned about the implication of the misapplication of risk assessments and risk benefit analyses in federal facility cleanup decisions and the problem it could create for the credibility of the cleanup process. All stakeholders should ensure that cleanups are protective of human health and the environment and reflect as broad a consensus as possible by placing risk assessment process in its proper perspective.

The Committee believes the various approaches one can take to evaluating, analyzing and assessing human health risk and risk reduction potential are tools that can help inform stakeholders as they make or participate in priority-setting decisions. However, the results of risk evaluations, analyses and assessments should not themselves be considered the defacto priorities.

When using risk assessment tools to help inform federal facility cleanup decisions, all key decision makers (i.e., not just the national program managers of the agencies responsible for conducting cleanups) should carefully distinguish between the following types of decisions:

- whether an environmental contamination problem poses a sufficient threat to human health or the environment to warrant action; and, if so,
- what type of action is warranted; and
- when it should be accomplished.

All of these decisions are a form of priority setting and all of them will be based on consideration of multiple factors. With the exception of emergency response situations, the Committee believes direct measures and estimates of human health and environmental risk are relatively more important in deciding whether to take action and, if so, what action should be taken, than in the case of deciding when the action should be accomplished. In using risk evaluation methodologies to determine the timing and sequence or, in the opposite case, delay of cleanup activities or projects, the primary focus should be on the relative risk reduction potential of those actions rather than the relative risk posed by the contamination. The relative risk is more appropriate to consider when deciding whether to take action and if so, what action.

As noted, the Committee believes the analytical tools that are currently available to evaluate human health and environmental risk have scientific uncertainties that are often not well understood or acknowledged by policy makers. Because of this, the Committee recommends that all key decision makers should adhere to the following when using risk assessments:

- a. There are scientific uncertainties associated with the myriad of assumptions imbedded in these analytical tools. Moreover, it should be recognized that there are often limitations on the availability and quality of data necessary to make effective use of such tools. Risk assessment reports should clearly delineate these limitations in laymen's terms as part of the analysis.
- b. Stakeholders should be involved in both the analysis of risk and risk reduction potential at the front end, including exposure assessments, as well as the risk management and broader priority setting decisions that flow from such analyses. Such involvement should be accomplished in a way that does not overly complicate the nature of the data and methodologies being used or the decisions being made on the basis of these analyses. This involvement should be encouraged to focus the effort and maximize the benefit of the study.
- c. The assumptions used in conducting risk assessments should be communicated at the front end so the results may be better understood. Overly certain or emphatic statements concerning the results of any effort to analyze or compare

risk or risk reduction potential such as those offering unqualified numerical precision should be avoided.

- d. Risk assessments should analyze appropriate carcinogenic and non-carcinogenic effects when evaluating the human health effects resulting from expected exposures.

If and when risk assessments are used, they should be used as a tool to help assess the risk to diverse populations (rather than averaging risks across the general population) including:

- a. communities of color and low-income communities historically subjected to environmental, social, and economic injustice;
- b. particularly susceptible sub-populations such as pregnant woman, children, the elderly, and populations exposed to multiple hazards; and
- c. risks to workers, as well as the general population.

It should be recognized that it is impossible to develop useful ordinal rankings of sites or cleanup activities based solely on risk or risk reduction potential. At best, the Committee believes risk assessments can be used to categorize environmental contamination problems into broad groupings such as those that pose high, medium, or low risk. It may also be possible to group and compare cleanup actions into those that may result in high, medium or low risk reduction per dollar of expenditure. Further ranking of contaminated areas or actions using risk assessments makes consideration of other important factors (described in Principle 10b below and Chapter 5) difficult if not impossible.

The effort involved in evaluating human health and environmental risk should be tailored to the decision or decisions at hand. Highly quantitative and technically complex risk assessments should be avoided when less involved analytical methods will meet the need. Such resource-intensive efforts can serve only to complicate, delay, and increase paperwork and costs without any clear value added.

Some components of the federal government, as well as stakeholder involvement groups, are beginning to make progress in balancing the careful consideration of risk and risk reduction potential with other important factors. Actions to force the consideration of risk to become the only factor in setting federal facility cleanup priorities will detract from this progress and should be avoided. As discussed in Chapter 5, the Committee recommends that a "risk plus other factors" approach be used to determine the sequencing and priority of cleanup activities.

B) Other Factors—In addition to human health and environmental risk, other factors warrant consideration in setting environmental cleanup priorities and milestones. These factors include:

- **cultural, social, and economic factors, including environmental justice considerations;**
- **short-term and long-term ecological effects and environmental impacts in general, including damage to natural resources and lost use;**
- **making land available for other uses;**
- **acceptability of the action to regulators, tribes, and public stakeholders;**
- **statutory requirements and legal agreements;**
- **life cycle costs;**
- **pragmatic considerations, such as the ability to execute cleanup projects in a given year, and the feasibility of carrying out the activity in relation to other activities at the facility;**
- **overall cost and effectiveness of a proposed activity; and**
- **actual and anticipated funding availability.**

The Committee believes that fiscal constraints do not justify failing to take actions to protect human health and environment, but may result in the need to set priorities about what cleanup actions can occur in any given year.

As discussed further in Chapter 5, risk to human health or its corollary, protection of human health is, at many sites, only a starting point for establishing cleanup funding priorities. The Committee also believes that in many other instances protection of the environment is the appropriate starting point for establishing cleanup funding priorities. Furthermore, in other cases, protection of human health and the environment is the appropriate starting point for establishing funding priorities for cleanup. The Committee strongly recommends that in those instances where protection of the environment is not used as a starting point for establishing cleanup funding priorities, it should be considered as one of the factors that are listed below.

Thus, while the Committee believes the comparison of human health and environmental risk and risk reduction potential is appropriate in setting priorities for federal facility cleanups, they are not the only factors, and risk must be viewed in the context of other social values, environmental goals, and economic benefits. Some of the other factors that should be considered in setting priorities for federal facility environmental cleanup include, but are not limited to:

- a) cultural, social, and economic factors, including environmental justice considerations;
- b) potential or future use of the facility, its effect on the local communities' economy, vitality, livability and environmental quality;
- c) the ecological impacts of the contamination and the proposed action to address it (in those instances where protection of the environment is not used as the primary basis for establishing cleanup funding priorities as further explained in Chapter 5);

- d) intrinsic and future value of affected resources (e.g., groundwater and fisheries);
- e) pragmatic considerations such as availability and continuity of skilled workers, labs, and cleanup contractors to complete the activity or the feasibility of carrying out the activity in relation to other activities at the facility (i.e., capacity and work flow logic), or both;
- f) the overall cost and cost effectiveness of a proposed activity and especially the relative risk reduction value obtained by the proposed expenditure;
- g) making land available for other uses, recognizing land uses may change over time;
- h) the importance of reducing infrastructure costs (e.g., \$300 million is spent each year to monitor tanks at Hanford and \$130 million is spent each year at Rocky Flats to safeguard special nuclear material);
- i) the availability of new or innovative technologies that might accelerate or improve the ability to achieve a permanent remedy;
- j) Native American treaties, statutory rights (e.g., American Indian Religious Freedom Act), and trust responsibilities;
- k) regulatory requirements and the acceptability of the proposed action to regulators and other stakeholders;
- l) supporting accomplishment of other high priority agency objectives;
- m) life-cycle costs; and
- n) actual and anticipated funding levels, as explained in Chapter 5.

These, as well as other factors that emerge should be considered by all key decision makers. This may occur concurrently with discovery of site-specific information and the recognition of stakeholder viewpoints. Care should be taken to ensure that the factors to be used are identified in advance of the need to make priority-setting decisions at the site-specific and national levels. Efforts to develop weights for each of these factors or to convert the priority-setting decision-making process into an overly quantitatively driven process should be avoided. Rather, the Committee believes we as a nation should find ways to improve participation in the federal facility priority-setting decision-making process such that the decisions made reflect as broad a consensus as possible as to the appropriate path forward. As noted above, negotiated agreements and meaningful stakeholder involvement can, and should continue to play an important role in carefully balancing the respective roles,

responsibilities, needs and interests of key decision makers and public stakeholders, especially as it relates to giving due consideration to all relevant decision-making factors.

10. The Importance of Pollution Prevention and Pollution Control Activities—Effective pollution prevention and pollution control activities are essential to prevent future environmental cleanup problems. Therefore, in carrying out their mission, federal agencies should view such activities as a cost of doing business and fully comply with environmental laws and regulations that are designed to accomplish these objectives.

The cost of cleanup is due, in part, to the historic lack of effective pollution controls prior to the passage of environmental laws during the last two or three decades and agencies' failure to comply with the pollution prevention and pollution control provisions of environmental laws such as RCRA, the Clean Water Act (CWA), the Clean Air Act (CAA), and the Atomic Energy Act. For this reason, the Committee believes that pollution prevention and pollution control measures should always be considered a cost of doing business, in contrast to cleanup measures, that the Committee acknowledges may sometimes need to be prioritized due to funding constraints. This principle is not intended to preclude or supersede the need for an integrated, systematic approach to setting priorities for cleanup actions. A systematic approach (as described more fully in Principle 13) is useful to determining appropriate time frames for cleanup and waste management activities.

The Committee recognizes that the line between pollution prevention and pollution control and cleanup measures may not always be clearly drawn. However, the following are examples of pollution prevention and pollution control measures that should be considered costs of doing business and funded together with the underlying activity. Persons who generate hazardous waste are required to comply with a set of regulations designed to minimize risks to communities, workers, and the environment. The regulations apply from the time the waste is generated, through its storage, treatment, and ultimate disposal. The pollution prevention and pollution control measures required under these regulations include such requirements as: a) training of workers who have to handle the wastes in their proper management; b) preparation, implementation and training related to a contingency plan governing what to do in case of an accident; c) periodic inspections; and d) more specific management practices related to the particular form of waste handling (e.g., the manager of a hazardous waste container is required to keep a container closed, except when waste is being added to or removed from the container).

The Committee acknowledges that not all pollution prevention and pollution control activities are legally required. Nevertheless, because pollution prevention actions are generally very cost-effective means of protecting human health and the environment, the Committee strongly supports implementation of pollution prevention actions.

To the extent that funding can be isolated from other decision-making factors in determining the appropriate timing of an activity, funding should not be a reason to delay or avoid undertaking a preventative pollution control action. Rather, funding of preventative pollution

control activities should be viewed as a cost of doing business and funded in conjunction with the activity causing the pollution.

11. The Role of Future Land Use Determinations in Making Cleanup Decisions — Reasonably anticipated future land uses should be considered when making cleanup decisions for federal facilities, provided that at the time of any land transfer there are adequate safeguards to protect land holders, those who will receive or lease the land, and surrounding communities. The communities that are affected by federal facility cleanups, along with their local governing bodies and affected Indian Tribes, should be given a significant role in determining reasonably anticipated future use of federal property that is expected to be transferred, and in how future use determinations will be used in making cleanup decisions.

The future use of land is currently considered as a factor in making cleanup decisions under federal law as well as many state laws. Future land use has relevance to the issue of funding and priority setting for federal facility cleanups in that many view the possibility of cleanup based on future uses more restrictive than residential use (e.g., industrial use) may result in less costly remedies, at least in the short-term.

Although the Committee views future land use as an appropriate factor in making cleanup decisions and setting priorities, decisions about future use are separate from decisions about cleanup. These decisions are often made by different bodies and although there clearly is, and should be a relationship between these decisions, it does not follow that a future use decision should automatically determine the cleanup remedy.

To meet the needs of impacted communities and budget-conscious federal agencies, the conditions under which future use should be considered need to be clarified. In particular, the Committee recommends that:

- a) Reasonably anticipated future use, not just current or immediately anticipated use, should be considered in cleanup decisions.
- b) For properties being transferred from federal ownership, future use determinations should be made by the state, tribal, or local authorities that will have jurisdiction over the land to be transferred, with appropriate forms of stakeholder involvement. The federal government should provide stakeholders with all relevant information on cleanup alternatives, including implications of land use choices and corresponding cleanup levels and remedies. Regulated agencies should remain neutral with respect to appropriate land use choices.
- c) When property is transferred from federal ownership, the federal agency should, after timely and reasonable investigation, fully disclose all hazards known or suspected to be present on the property.

- d) Cleanup for property remaining in federal ownership should consider the anticipated federal use of the property and the need to continue the cleanup process even if the property is transferred from one federal agency to another federal agency. If such property is subsequently transferred from federal ownership, the cleanup decision should be re-evaluated in light of the land use selected by the state, tribal, or local authorities that have jurisdiction over the land to be transferred.
- e) For property expected to be transferred, at the time of transfer the transferring agency should fully disclose who will be financially responsible if the land use changes to one that would require additional cleanup. Furthermore, financial responsibility should be addressed explicitly in the negotiation of the transfer agreement.
- f) When making cleanup decisions for properties remaining in federal ownership, cleanup advisory boards, local planning and reuse authorities, and the public stakeholders should be consulted about reasonable anticipated future use assumptions.
- g) If there is a danger that contaminants and other hazards will migrate to adjacent lands, the migration should be contained or the source eliminated. If such migration has already occurred, the contamination should be addressed in accordance with the risk plus other factors priority-setting process in Chapter 5.
- h) Where appropriate, the designated groundwater use should have a greater impact on cleanup standard decisions than the future use of the facility.
- i) In circumstances where reasonably anticipated future use includes mixed uses such as child care centers, medical facilities, and parks mixed with industrial or office areas, the implications for all uses should be evaluated when making cleanup decisions.
- j) The cost and delay associated with determining and evaluating the impact of future use may, in some cases, mean that selecting the most stringent cleanup standard or remedy (e.g., one based on a unrestricted use) is the most cost effective and least time consuming approach to moving forward with the cleanup process when compared to the marginal savings that may result from using a less stringent cleanup standard or remedy. In other cases, this will not be true.
- k) Land not cleaned up to standards permitting unrestricted use should be subjected to appropriate enforceable institutional controls (e.g., deed restrictions, zoning, physical controls, and/or monitoring for the life of the hazard). Such controls are necessary not only to protect human health and the environment, but also to preserve the integrity of the cleanup remedy. The cost

of such monitoring and controls should be considered in evaluating the savings achieved by implementing the less stringent cleanup standard. The significant problems and costs posed by maintaining institutional controls over the extremely long life of contaminants such as certain radionuclides merit serious consideration in the decision on what action to take.

- 1) In those limited instances where there are long-term, persistent, and high-level risks to human health and the environment, and the technological capability does not yet exist to permanently remove those risks, or where the cost of the technology that would permit unrestricted use or even some limited uses is extraordinarily high, land use restrictions may allow for interim actions that are protective of human health and the environment. However, the responsible federal agency, with the involvement of regulatory authorities and other stakeholders, should commit to undertake pilot testing, technology demonstration, or research and development aimed at establishing the technological capability to address the problem. Furthermore, it must be recognized that such actions are indeed interim actions and do not absolve the responsible agency from taking a final action.

Building on Principle 1, some Committee members believe that additional recommendations are necessary to achieve the principle of minimizing burdens on future generations. Specifically, some Committee members believe that cleanups should be designed to ensure that the treatment, disposal and isolation of the contamination itself, as well as the cleanup wastes and all other wastes from the facility, occur in such manner that the contamination/wastes will not pose a threat to human health and the environment within a specified period of time (e.g., 100 - 500 years), thereby allowing for unrestricted use of previously contaminated lands and disposal sites within the specified period. Other Committee members believe that in most cases existing laws and regulations are adequate to achieve the principle of minimizing burdens on future generations and/or that unrestricted use is not an appropriate goal in some cases. Still other Committee members believe that while the above views represent a laudable goal, it is impracticable in some cases. In particular the characteristics of the waste (e.g., half-lives of thousands of years), the cost and cost effectiveness of current technologies, and/or political realities (e.g., disposal facility siting disputes) will make it difficult if not impossible to achieve unrestricted use of contaminated lands or disposal sites within a specified period such as 100 - 500 years.

12. The Role of Studies in the Cleanup Process—The identification and characterization of contamination and the evaluation of health impacts on human populations are essential parts of the cleanup process. Efforts to streamline the cleanup process should focus on reducing paperwork and moving away from adversarial relations toward cooperation, not the arbitrary capping of funding for studies.

There is a great deal of frustration across the country over the slow pace of cleanup at non-federal as well as federal facilities. Historically, in too many instances regulated agencies and regulators have prepared and reviewed documents with a view toward building a potential

legal case rather than promoting timely cleanup. The Committee supports efforts to eliminate or reduce unneeded paperwork, accelerate document reviews, and promote frequent consultation among the parties.

Arbitrary funding limits on study, however, could actually delay cleanup and undermine priority setting. Many facilities have not yet been fully surveyed or had their sites characterized. Limits on study could prevent contamination at those facilities from even being recognized. Funding limitations also prevent the conduct of human health studies necessary to inform cleanup decisions.

At large, complex hazardous waste sites—often the very sites that are considered a high priority by all stakeholders—caps on funding for study may prevent completion of work necessary to move forward with the "moving of dirt" or other treatment. For example, in remediating groundwater contamination, extraction wells cannot be sunk effectively, or the determination that "pump and treat" is an appropriate remedy cannot be made, without first characterizing where contamination exists in the ground water.

If arbitrary limits are placed on study, agencies would be pressured to move forward with activity at low priority sites that require less study rather than complete much more complex projects at sites that pose very serious, but more complex threats to public health and the environment. The Committee believes that increased cooperation between all stakeholders is necessary to better focus and use cleanup studies that result in action rather than a justification for more study.

13. The Need for a Systematic Approach to Decision Making and Priority Setting
—Federal facility priority-setting decisions should be made in a manner that recognizes their interconnectedness to other environmental problems.

In addition to the consideration of multiple factors when setting federal facility cleanup priorities, it is often very important to consider priority-setting decisions from a systems-oriented perspective. This means holistic and systematic methods should be applied in deciding cleanup actions and other related federal actions intended to reflect public stakeholder values. Such methods must consider the different values of public stakeholders and resolve conflicts in a fair and equitable manner.

A systems-oriented perspective is especially pertinent in the context of cleanup at DOE's former nuclear weapons production facilities. At such facilities it is critically important to consider the interrelationships between issues such as safeguarding special nuclear materials; treatment, storage and disposal of all the various forms of waste found at such sites; restoration and remediation of contaminated environmental media; and technology research and development. None of these issues should be considered in isolation of the other. The same can be said of federal facility sites and programs managed by agencies other than DOE, on perhaps a smaller and less technically complex scale.

14. Stakeholder Involvement—Public stakeholders and local governments historically have not been involved adequately in the federal facility cleanup decision making and priority-setting process. Agencies responsible for conducting and overseeing cleanup and related public health activities must take steps to address this problem, with the overall goal of ensuring that federal facility cleanup decisions and priorities reflect a broad spectrum of stakeholder input from affected communities including indigenous peoples, low-income communities, and people of color. Like pollution prevention and pollution control measures, meaningful stakeholder involvement has in many instances resulted in significant cleanup cost reductions. It should therefore not only be considered as a cost of doing business but as a potential means of efficiently determining and achieving acceptable cleanup goals.

As defined by the Committee, "stakeholders" are those affected by or who otherwise have an interest or "stake" in or the ability to influence the outcome of, in this case, federal facility environmental cleanup decisions. Using this definition, all of the interdependent decision makers described above in Principle 7, as well as those affected by their decisions, can be considered stakeholders—the public, regulators, and the regulated agencies.

In the remainder of this section, however, the Committee focuses on those individuals and groups who do not have a formal or statutorily defined decision-making role. It was these public stakeholders that were the primary focus of the Committee's recommendations regarding the establishment of advisory boards, as well as other improvements to community involvement processes. In addition, local government involvement is usually not formally or statutorily defined, and it should be considered as a part of stakeholder involvement. Meaningful local government involvement, particularly the involvement of officials from affected communities, is essential given that the future of these communities is integrally linked to the outcome of cleanup decisions.

The Committee believes continued improvements aimed at even more meaningful and effective public stakeholder involvement will provide a solid foundation for finding a credible and reasonable path forward. Public stakeholders can and should continue to play a critical role in providing input on:

- the consideration of risk and risk reduction potential in relation to other relevant priority-setting factors and in determining what those factors are;
- the determination and consideration of reasonably anticipated future site use as it relates to cleanup standards and remedy selection;
- how to keep the cost of accomplishing the cleanup mission as low as is reasonably possible;
- the sequencing of cleanup activities;

- the priorities that should be included as milestones in negotiated agreements; and
- what constitutes a credible environmental cleanup program, particularly at a facility level, that is protective of human health and the environment and achieves satisfactory progress in site cleanup over a reasonable period of time.

Properly designed and executed community involvement processes can help to resolve the legitimate dynamics of the simultaneous need to make decisions and set priorities at both the facility level and the national level. In recognition of this, the Committee believes that any efforts to improve stakeholder involvement in the federal facility cleanup decision-making process should strive to:

- create a process in which communities and agencies are seen as equal partners in the dialogue on cleanup issues;
- establish productive working relationships among the community, local facility managers, and regulators;
- increase the accountability of federal agencies to local communities, including those who have historically been subject to social, economic and environmental injustice;
- produce results that restore the environment while meeting local community needs;
- harness and build upon local and indigenous leadership and expertise;
- demonstrate an enduring commitment to the Environmental Justice Executive Order (Executive Order 12898, February 11, 1994);
- develop linkages among communities and public stakeholders across the nation to share information about how priorities are being set and decisions are being made at federal facilities;
- recognize that an open process that involves public stakeholders can help promote efficiency and hold down costs;
- ensure environmental regulations are implemented equitably; and
- provide access to resources, information, and training so all stakeholders are able to participate in decision making.

Conclusion

In offering these principles, the Committee hopes to improve the overall process of federal facility cleanup decision making. They are intended to apply broadly to all aspects of that process, and all individuals and institutions involved in that process. The following chapters offer more concrete recommendations for some of the concepts embodied above. In

particular, the Committee has focused on improving overall community involvement in this process; the use of advisory boards and funding and priority-setting processes which were the focus the Interim Report; and building the capacity of all stakeholders to effectively participate in the process.

