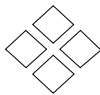


US EPA ARCHIVE DOCUMENT

2 FACILITY SITING  
AND PERMITTING

Facility siting and permitting have become the most contentious and difficult aspects of the solid waste management process. Public officials are challenged to find sites that are technically and environmentally sound and socially acceptable. The intense political conflicts in local communities center on important questions of the appropriate use of technology, acceptable levels of risk, and the distribution of decision-making power in a democratic society.

This chapter summarizes the detailed discussion of facility siting issues set forth in the U.S. Environmental Protection Agency document *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*. The USEPA siting guide provides a detailed procedure for effectively siting a solid waste facility. Readers needing more detail than this guidebook provides are encouraged to thoroughly review *Sites for Our Solid Waste*.

This chapter also briefly addresses permitting solid waste management facilities. Although specific regulatory requirements for proposed alternatives vary from state to state, there are general guidelines that should be followed to successfully implement a project. A proper approach to securing permits is essential, since the decision to seek a facility permit requires a significant expenditure of community resources and time.



From: Decision Maker's Guide to Solid Waste Management, Volume II, (EPA 530-R-95-023), 1995. Project Co-Directors: Philip R. O'Leary and Patrick W. Walsh, Solid and Hazardous Waste Education Center, University of Wisconsin-Madison/Extension. This document was supported in part by the Office of Solid Waste (5306), Municipal and Industrial Solid Waste Division, U.S. Environmental Protection Agency under grant number CX-817119-01. The material in this document has been subject to Agency technical and policy review and approved for publication as an EPA report. Mention of trade names, products, or services does not convey, and should not be interpreted as conveying, official EPA approval, endorsement, or recommendation.

# 2 HIGHLIGHTS



**Facility siting and permitting is a potentially contentious process.**  
(p. 2-1)

Facility siting and permitting has become the most contentious and difficult part of the solid waste management process. Finding sites that are both technically feasible *and* environmentally and socially acceptable can be difficult. Many communities have experienced intense political conflicts centered on uses of technology, acceptable levels of risk, and distribution of decision-making power.

**When creating a siting strategy, consider lessons from experience.**  
(p. 2-4)

- Use the political/technical expertise of public officials and citizens.
- Consult with the relevant public sector at every stage.
- Provide accurate, useful information about all aspects of the project, including risks, and maintain a dialogue with the public.
- Keep the process flexible and negotiable.
- Use only accurate and truthful information (written or spoken) at all times.
- Successful siting may involve compensation for real or perceived local impacts.

**Developing a public involvement plan early is crucial.**  
(p. 2-4 — 2-7)

Behind-the-scenes decision making, called the “decide-announce-defend” model, is likely to be unacceptable today. The public must be given an opportunity to participate in every phase of the siting process. Developing a public involvement plan is crucial; Table 2-1 outlines the elements of such a plan.

Clearly identifying the different segments (or publics) in the community is the first step. The reasons people get involved include their proximity to possible sites, economic impact, usefulness of the facility, personal values, legal mandates.

Program organizers and officials should inform the public of the following:

- possible site-related and broadly based socioeconomic issues
- possible consequences of choosing not to have a facility
- how individuals can get involved (in what types of tasks and projects)
- how to get information about the proposed project and how to contact relevant officials
- how to make their opinions known to decision makers.

**Several techniques for involving the public are available.**  
(p. 2-8 — 2-10)

Public involvement should be a dialogue—two-way communication in which clearly stated and objective information is provided and the public’s concerns, opinions, and ideas are solicited and considered. Table 2-3 describes major techniques for communicating with the public; Table 2-4 provides techniques for soliciting public input.

**Communicating risk is essential.**  
(p. 2-8 — 2-12)

Risk communication emphasizes a two-way information exchange in which risk managers listen to and learn from the public. Table 2-5 presents USEPA’s “Seven Cardinal Rules of Risk Communication.” Risk managers should provide accurate, objective information early in the process so citizens can form accurate conclusions about the proposed project when risk-related questions arise. Some risk-related cautions include:

- Do not assume that a risk management program will solve all siting-related problems.
- Be aware that developing an effective risk-communication program is not easy.
- Do not assume that developing a risk-communication plan ensures community acceptance of the risks (real or perceived) associated with the proposed project.



**Follow these six steps when developing a risk communication plan.**

(p. 2-11 — 2-12)

1. Identify the risk communication objectives for each step in the siting process (see Table 2-6).
2. Know what information should be exchanged at each stage. A “risk management checklist” is provided in Table 2-7.
3. Identify the groups with whom information must be exchanged.
4. Develop appropriate risk messages for each targeted audience.
5. Identify the appropriate channels for communicating risks to various segments of the public.
6. Evaluate your efforts and modify the approach as needed.

**Building credibility for technical information is essential.**

(p. 2-13)

Public mistrust of technical information is a major siting issue. Communicating accurate technical information is crucial. The following can help build credibility:

- Anticipate issues likely to emerge.
- Involve the public in planning and in selecting technical consultants.
- Use an “outside,” jointly chosen impartial expert to review technical studies.
- Present technical information in language for nontechnical audiences.
- Openly discuss uncertainties and assumptions.

**Address possible negative impacts (real or perceived) early in project development.**

(p. 2-14)

Common concerns about solid waste facilities that may require some form of mitigation include process issues, health risks, environmental issues, and local impacts. Basic steps in planning for impacts include the following:

1. Outline a decision-making process for mitigation issues.
2. Identify issues that are likely to arise.
3. Identify concerned segments of the public for each issue.
4. Identify forums for resolving mitigation issues with those affected.
5. Integrate required mitigation activities into the public involvement plan.


**The permitting process requires knowledge and technical expertise.**

(p. 2-15 — 2-17)

Federal, state, and local governments enact laws to ensure that proposed projects meet minimum technical and legal criteria. The number of permits required depends on the type of facility being planned and local, state, and federal laws. Permitting ensures that a proposed project will not unduly affect the health and environment of the community and that it will be consistent with local public policy.

After an internal review that includes public input, the reviewing agency must produce a written decision awarding a permit or disallowing the project.

It is crucial to accurately determine which permits will be required for the proposed facility; a permitting oversight can paralyze a project. To determine permit needs consult with appropriate local, state, and federal agencies, such as state/tribe and local environmental planning agencies.

2 FACILITY SITING  
AND PERMITTING

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**THE SITING PROCESS**

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*Public involvement in the siting process is crucial to a program's success.*

The traditional siting process, sometimes called the “decide-announce-defend” model, placed decision-making power in the hands of a few key individuals. But citizens have demonstrated that they will not accept behind-the-scenes decisions on solid waste management, and a new approach to siting is being tried around the country; it consists of three related phases—planning, site selection and facility design, and implementation. Any stage of the siting process may be subjected to intense public debate (see Figure 2-1).

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**Creating a Siting Strategy**

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*Consider these tips from previous siting experiences.*

Most experts agree that no perfect siting model exists. Even so, lessons from successful sitings do offer insight into which strategies should be pursued and how public officials can resolve particularly difficult issues. The following lessons have been drawn from actual sitings.

- Successful siting efforts require the political and technical expertise of both public officials and citizens.
- Appropriate sectors of the public should be consulted at every stage of the decision-making process.
- Successful sitings require an informed and thorough analysis; a good risk-communication program establishes an exchange of information among various participants.
- Credible and accurate technical information is crucial to resolving conflicts in the siting process.
- The siting process must be flexible; all characteristics are negotiable.
- Careful planning and effective management are essential for successful siting.
- The state plays an important role in supporting an effective siting process.
- All information, written or oral, must be honest at all times.
- Siting a waste management facility must be only one part of an integrated waste management strategy. No one facility is the answer.
- Siting may involve compensation for real and perceived local impacts.

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**Who Is the Public?**

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The first step in designing a public involvement program is to stop and think: Who is the public? The public is not a single entity—many interests and

**Figure 2-1**  
The Three-Phase Siting Framework

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**Phase I: Planning**

Identifying the problem ▼	Recognizing the growing waste stream, rising costs, and capacity shortfall.
Designing the siting strategy ▼	Planning and integrating public involvement, risk communication, mitigation and evaluation activities.
Assessing alternatives ▼	Researching, debating, and choosing among the options: recycling, source reduction, incineration, and land disposal.
Choosing site feasibility criteria ▼	Studying population densities, hydrogeological conditions, and socioeconomic characteristics.

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**Phase II: Site selection and facility design**

Selecting the site ▼	Performing initial site screening and designation; acquiring land; conducting permit procedures; performing initial environmental review; developing environmental impact statement if necessary.
Designing the facility ▼	Choosing technologies, dimensions, safety characteristics, restrictions, mitigation plans, compensation arrangements, and construction.

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**Phase III: Implementation**

Operation ▼	Monitoring incoming waste; managing waste disposal; performing visual and lab testing; controlling noise, litter and odor.
Management ▼	Monitoring operations and safety features; performing random testing of waste; enforcing permit conditions.
Closing and future land uses	Closing and securing the facility; deciding on future land uses; and performing continued monitoring.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

groups make up the various segments of the public. Some interests or groups are well established, such as professional associations, political parties, churches, some social groups, and home owners' associations. Others are newly established because their members have a common, continuing interest in the proposed community action.

Community members might become involved in siting for several reasons:

- **Proximity:** People who live in the immediate vicinity of a facility may feel that their health and environment are threatened.

- **Economic impact:** People are concerned about effects waste problems might have on municipal services and on economic development.
- **Users:** Prospective users of a facility may become involved if the use is threatened.
- **Social/environmental issues:** People may become involved in siting as a result of larger community issues such as air and water pollution or a desire to force a community to initiate waste reduction or recycling programs.
- **Values:** When questions of health or safety reach a high level of polarization, citizens often discuss waste issues in terms of ethics or moral values.
- **Legal mandates:** Governmental agencies at the local and state levels play the most significant roles in facility sitings; however, federal agencies may become participants depending upon the issues involved.

*Different segments of the public have different rates of involvement in waste management programs.*

*Involvement also differs over time.*

*Officials have several obligations to the public.*

The various segments of the public will have different levels of involvement based on different roles, technical expertise, and willingness to commit time, energy, and in some cases money. Different types of public involvement may be necessary to reach different groups (see Figure 2-2).

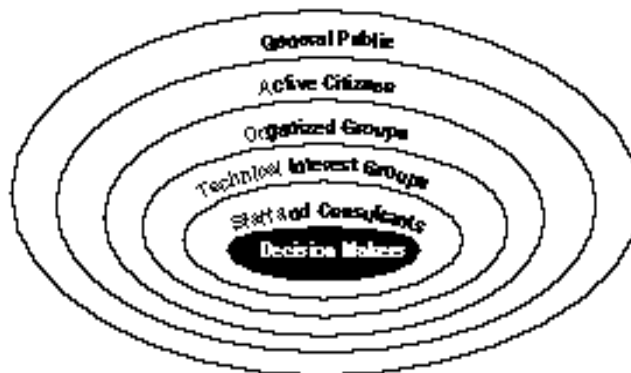
Different kinds of public involvement may be required depending upon the group. A steering committee or technical advisory committee can be useful in helping to design studies that need to be conducted, perform technical reviews, rank consulting firms, and review rankings for sites. Because individuals and groups will differ in the amount of time and energy they are willing to invest, a variety of opportunities for public participation should be offered to accommodate varying levels of interest and expertise.

The size and composition of the involved public will also change over time. Different groups and interests will be represented at different stages of the siting process. The size of the interested public for a particular issue will increase with controversy, and public involvement will increase as the siting process progresses.

In developing a siting program, officials have several obligations to the general public:

- Inform the public of the likely consequences of a proposed action, so that people can choose whether to participate; the consequences should encompass site-related issues and more broadly based socioeconomic issues.

Figure 2-2  
Levels of Involvement by Various Segments of the Public



USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

- Inform the public of the consequences of not taking a proposed action.
- Tell people how they can participate so those who are interested can get involved.
- Provide all segments of the public equal access to information and to decision makers.
- Seek the full spectrum of opinions within the community.

## Including the Public in the Process

*Developing a plan for involving the public is advisable.*

Experience from successful sitings shows that involving the public is as important to success as performing good technical studies. Effective public involvement requires integrating public concerns and values at every stage of the siting process. Token participation will not buy credibility and may even offend the public more than if there had been no consultation at all.

Most experienced practitioners prepare a formal public involvement plan at the beginning of any decision-making process. There are three major reasons for developing a public involvement plan:

1. Preparing a plan forces careful analysis of how the public fits into the siting process.
2. Preparing a plan provides a mechanism for consultation among the various agencies and entities that have a stake in the program.
3. A plan communicates to the public what to expect, helping to establish the credibility of the sponsoring agencies.

When developing a plan, identify organized groups likely to have an interest in the siting issue. Develop the plan using expertise from a variety of departments and agencies, including the one siting the solid waste facility. Also, involve private-sector representatives who can or will be affected by the siting. Have one member designated as the leader of the group to help move people through the thought process for developing the plan.

The plan should ultimately be a summary of the group's thinking, rather than a plan imposed on the group. Table 2-1 sets forth the elements of a public involvement plan. The plan can vary in length, but it should be a flexible document that will provide a structure for analyzing the requirements of the situation. The objectives of the plan (see Table 2-2) can be used to measure the adequacy of preliminary drafts. The plan must be dynamic and be updated as circumstances change. Planning should include periodic review to evaluate program effectiveness.

**Table 2-1**

The Elements of a Public Involvement Plan

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Describe any early consultation (e.g. interviews with interest group leaders) that led to the development of the plan.</li> <li>• Describe the major issues likely to emerge in the course of the siting process.</li> <li>• Estimate the level of public interest likely to be generated by the decision under consideration.</li> <li>• List the agencies, groups and key individuals most likely to be interested in the siting process.</li> </ul> | <ul style="list-style-type: none"> <li>• List the major stages in the siting process.</li> <li>• Outline a sequential plan of public involvement activities for each stage in the siting process.</li> <li>• List key points when the public involvement plan will be reviewed, and if necessary, revised.</li> <li>• Provide, for internal discussion, a staff and budget estimate and an analysis of the support services required to implement the plan.</li> </ul> |
|---|--|

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

## Techniques for Involving the Public

*Establishing two-way communication with the public is crucial.*

Public involvement is a dialogue, a two-way communication that involves both getting information out to the public and getting back from the public ideas, issues, and concerns. For convenience, it is easier to divide the public involvement process into two categories: information techniques (getting information to the public) and participation techniques (getting information from the public). Some major techniques for communicating to the public are described in Table 2-3.

Once the public has been informed, the next step is to provide forums or mechanisms by which the public can express issues or concerns. Table 2-4 provides a number of techniques available for seeking public input. Advantages and disadvantages of each technique are described.

No one public involvement program meets the needs of all circumstances. It is important to clearly define the goals of public participation and which segments of the public should be addressed at various stages in the siting process.

In developing a public involvement plan, a few cautions should be observed:

- Advisory groups can be very helpful, but be aware of their limitations—members must be certain about the group's charter and should not spend so much time agreeing on procedures that people concerned with substance become alienated.
- Public information materials should provide useful, objective information. They should not be public relation pieces aimed at selling a particular point of view.
- Play it straight with the media. Provide all information objectively and factually.
- Get back to people promptly in response to comments. Without feedback, you provide no rewards to stimulate further public participation.
- Never surprise elected officials. Never announce a site has been selected in an official's district without briefing him or her first.

## Communicating Risks More Effectively

*Successful risk communication involves listening to and learning from the public.*

Risk communication is the exchange of information between risk managers and the general public about a particular issue. Risk communication emphasizes a two-way information exchange in which risk managers also listen and learn from the public. This information exchange is crucial to a responsive, participatory siting process.

**Table 2-2**

**The Objectives of a Public Involvement Plan**

- Include enough detail so that everyone involved in implementing the plan knows what he or she is expected to do, and when.
- Include enough detail to permit development of budget, staff, and schedule estimates.
- Allow agency management or policy boards to assess the adequacy of the activities planned in relationship to the anticipated public interest.
- Clearly communicate to the public how and when they will have opportunities to participate.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

Table 2-3

## Public Information Techniques

Technique	Features	Advantages	Disadvantages
Briefings	Personal visit or phone call to key officials or group leaders to announce a decision, provide background information, or answer questions.	Provide background information. Determine reactions before an issue "goes public." Alert key people to issues that may affect them.	Requires time.
Feature stories	In-depth story about the siting study in newspapers or on radio and television.	Provide detailed information to stimulate interest in the siting study, particularly at key junctures such as evaluating alternative sites or selecting a preferred site. Often used prior to public meetings to stimulate interest.	Newspaper will present the story as editor sees fit—project proponent has no control over how the story is presented, except to provide full information.
Mailing out key technical reports or environmental documents	Mailing technical studies or environmental reports to other agencies and leaders of organized groups or interests.	Provides full and detailed information to people who are most interested. Often increases credibility of studies because they are fully visible.	Costs money to print and mail. Some people may not even read the reports.
News conferences	Brief presentation to reporters, followed by question-and-answer period, often accompanied by handouts of presenter's comments.	Stimulate media interest in a story. Direct quotes often appear in television/radio. Might draw attention to an announcement or generate interest in public meetings.	Reporters will only come if the announcement/ presentation is newsworthy. Cannot control how the story is presented, although some direct quotes are likely.
Newsletters	Brief description of what is going on in the siting study, usually issued at key intervals for all people who have shown an interest in the study.	Provide more information than can be presented through the media to those who are most interested. Often used to provide information prior to public meetings or key decision points. Also maintain visibility during extended technical studies.	Requires staff time and costs money to prepare, print, and mail. Stories must be objective and credible or people will react to newsletters as if they were propaganda.
Newspaper inserts	Much like a newsletter, but distributed as an insert in a newspaper.	Reach the entire community with important information such as project need and alternative sites being considered. Is one of the few mechanisms for reaching everyone in the community through which you can tell the story your way.	Requires staff time to prepare insert, and distribution costs money. Must be prepared to newspaper's layout specifications. Potential negative reaction to use of public funds for this purpose exists.
News releases	A short announcement or news story issued to the media to get interest in media coverage of the story.	May stimulate interest from the media. Useful for announcing meetings or major decisions or as background material for future media stories.	May be ignored or not read. Cannot control how the information is used.
Paid advertisements	Advertising space purchased in newspapers or on radio or television.	Effective for announcing meetings or key decisions. Story presented the way you want.	Advertising space can be costly. Radio and television may entail expensive production costs to prepare the ad. Potential negative reaction to use of public funds for this purpose exists.
Presentations to civic and technical groups	Deliver presentations, enhanced with slides or viewgraphs, to key community groups.	Stimulates communication with key community groups. Can also provide indepth feedback.	Few disadvantages, except some groups may be hostile.
Press kits	A packet of information distributed to reporters.	Stimulates media interest in the story. Provides background information which reporters use for future stories.	Has few disadvantages, except may be ignored. Cannot control how the information is used.
Public service announcements	Short announcement provided free of charge by radio and television stations as part of their public service obligations.	Useful for making announcements such as for public meetings.	Many organizations compete for the same space. Story may not be aired or may be aired at hours when there are few listeners.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement* 1990

**Table 2-4**  
Participation Techniques

Technique	Features	Advantages	Disadvantages
<b>Advisory groups/task forces</b>	A group of representatives of key interested parties is established. May be a policy technical or citizen advisory group.	Provide oversight to the siting process. Promote communication between key constituencies. Anticipate public reaction to publications or decisions. Provide a forum for reaching consensus.	Potential for controversy exists if "advisory" recommendations are not followed. Requires substantial commitment of staff time to provide support to committees.
<b>Focus groups</b>	Small discussion groups established to give "typical" reactions of the public. Conducted by professional facilitator. Several sessions may be conducted with different groups.	Provide in-depth reaction to publications ideas or decisions. Good for predicting emotional reactions.	Get reactions, but no knowledge of how many people share those reactions. Might be perceived as an effort to manipulate the public.
<b>Hotline</b>	Widely advertised phone number handles questions or provides centralized source of information about the siting.	Gives people a sense that they know whom to call. Provides a one-step service of information. Can handle two-way communication.	Is only as effective as the person answering the hotline phone.  Can be expensive.
<b>Interviews</b>	Face-to-face interviews with key officials interest group leaders or key individuals.	Can be used to anticipate issues or anticipate the reactions of groups to a decision. Can also be used to assess "how are we doing."	Requires extensive staff time.
<b>Hearings</b>	Formal meetings where people present formal speeches and presentations.	May be used as a "wrap-up meeting" prior to final decision. Useful in preparing a formal public record for legal purposes.	Exaggerates differences. Does not permit dialogue. Requires time to organize and conduct.
<b>Meetings</b>	Less formal meetings for people to present positions, ask questions, and so forth.	Highly legitimate form for the public to be heard on issues. May be structured to permit small group interaction—anyone can speak.	Unless small-group discussion format is used, permits only limited dialogue. May get exaggerated positions or grandstanding. Requires staff time to prepare for meeting.
<b>Workshops</b>	Smaller meetings designed to complete a task.	Very useful for tasks such as identifying siting criteria or evaluating sites. Permits maximum use of dialogue, good for consensus-building.	Limitations on size may require several workshops in different locations. Is inappropriate for large audiences. Requires staff time for multiple meetings.
<b>Plebiscite</b>	City-wide election to decide where or whether a facility should be built.	Provides a definite, and usually binding, decision on where or whether a facility should be built.	Campaign is expensive and time-consuming. General public may be susceptible to uninformed emotional arguments.
<b>Polls</b>	Carefully designed questions are asked of a portion of the public selected as representative of public opinion.	Provides a quantitative estimate of general public opinion.	Provides a "snapshot" of public opinion at a point in time—opinion may change. Assumes all viewpoints count equally in decision. Costs money and must be professionally designed.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement* 1990

*Inform the public honestly about potential risks and precautions.*

The primary goal of risk communication in the siting process is to help participants, and even observers who may become participants, make informed contributions to the decision-making process. As stated by the National Research Council, "Risk communication is successful only to the extent that it raises the level of understanding of relevant issues or actions and satisfies those involved that are adequately informed within the limits of available knowledge" (USEPA 1990).

In siting solid waste facilities, communicators need to tell the public what is known about environmental and health risks associated with the facility and what precautions are being taken to manage those risks.

Officials need to consider these precautions to avoid pitfalls in developing a risk-communication program:

1. Do not assume that developing a risk-management communication program will solve all the problems with the siting process.
2. Do not assume that developing an effective risk-communication program is an easy task.
3. Do not assume that developing a risk-communication program guarantees public acceptance of the risks.

*Make information easily accessible to the public.*

Developing a risk-communication program at the beginning of the siting process will increase the likelihood that the public has access to useful information when it is most needed. USEPA's Seven Cardinal Rules of Risk Communication provides a guide (see Table 2-5). Risk communication should be integrated into the public involvement plan. Keep a written plan or record of risk-communication activities to provide a data base for evaluating the effectiveness of the program.

The six steps to follow in developing a risk-communication program are as follows:

1. Identify the risk-communication objectives for each step in the siting process (see Table 2-6).
2. Determine the information exchange needed to complete each step in the siting process. Table 2-7 is a typical risk message checklist.
3. Identify the groups with whom information must be exchanged.

**Table 2-5**  
Seven Cardinal Rules of Risk Communication

There are no easy prescriptions for successful risk communication. However, those who have studied and participated in recent debates about risk generally agree on seven cardinal rules. These rules apply equally well to the public and private sectors. Although many of the rules may seem obvious, they are continually and consistently violated in practice. Thus, a useful way to read these rules is to focus on why they are frequently not followed.

1. Accept and involve the public as a legitimate partner.
2. Plan carefully and evaluate your efforts.
3. Listen to the public's specific concerns.
4. Be honest, frank and open.
5. Coordinate and collaborate with other credible sources.
6. Meet the needs of the media.
7. Speak clearly and with compassion.

USEPA, *Seven Cardinal Rules of Risk Communication*, 1988

4. **Develop appropriate risk messages for each targeted audience. Some key characteristics of public risk perceptions are set forth in Table 2-8.**
5. **Identify the appropriate channels for communicating risks to various segments of the public.**
6. **Evaluate efforts and modify approach as needed.**

**Table 2-6**  
Examples of Risk Communication Objectives

- Include enough detail so that everyone involved in implementing the plan knows what he or she is expected to do, and when.
- Include enough detail to permit development of budget and staff and to schedule estimates.
- Allow agency management or policy boards to assess the adequacy of the activities planned in relationship to the anticipated public interest.
- Clearly communicate to the public how and when they will have opportunities to participate.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

**Table 2-7**  
Risk Management Checklist

**Information about the nature of risks**

1. What are the hazards of concern?
2. What is the probability of exposure to each hazard?
3. What is the distribution of exposure?
4. What is the probability of each type of harm from a given exposure to each hazard?
5. What are the sensitivities of different populations to each hazard?
6. How do exposures interact with exposures to other hazards?
7. What are the characteristics of the hazard?
8. What is the total population risk?

**Information about the nature of benefits**

1. What are the benefits associated with the hazard?
2. What is the probability that the projected benefit will actually follow the activity in question?
3. What are the characteristics of the benefits?
4. Who benefits and in what way?
5. How many people benefit and how long do benefits last?
6. Which groups get disproportionate shares of the benefits?
7. What is the total benefit?

**Information about alternatives**

1. What are the alternatives to the hazard in question?
2. What is the effectiveness of each alternative?
3. What are the risks and benefits of each alternative and of not acting?
4. What are the costs and benefits of each alternative and how are they distributed?

**Uncertainties in knowledge about risks**

1. What are the weaknesses of available data?
2. What are the assumptions on which estimates are based?
3. How sensitive are the estimates to changes in assumptions?
4. How sensitive is the decision to changes in the estimates?
5. What other risk and risk control assessments have been made and why are they different from those now being offered?

**Information about management**

1. Who is responsible for the decision?
2. What issues have legal importance?

Source: National Research Council, *Improving Risk Communication*, 1989

## Building Credibility for Technical Information

*Public skepticism about technical information must be addressed.*

Public mistrust of technical information is a major siting issue. Communicating accurate technical information is a crucial part of the process. Two of the most important goals for risk communicators are building the credibility of technical information in the eyes of the public and improving the relevance of technical studies to public concerns.

People assume that once an issue is controversial, all sides are using technical information in an effort to “win,” or to convince the public. Mistrust seems to be characteristic of political conflict. If the credibility of technical information is to be protected and maintained throughout the siting process, steps must be taken early in the siting process before a situation becomes controversial. If a siting issue becomes polarized, and program developers are seen as advocates, restoring credibility is difficult. When a final choice is made, advocacy is expected. The following can help build credibility for technical information:

- Anticipate the issues that will emerge.
- Solicit public participation in developing the study plan.
- Validate methodological assumptions.
- Invite public involvement in selecting consultants.
- Provide technical assistance to the public.
- Use an outside jointly chosen impartial expert to review technical studies.

**Table 2-8**

### Key Characteristics of Public Risk Perceptions

- *Voluntary risks are accepted more readily than those that are imposed.* Communities react angrily if they feel coerced into accepting a new solid waste facility. This reaction against the siting process and the agency personnel ultimately leads to a greater perception of risk.
- *Risks under individual control are accepted more readily than those under government control.* In contrast to a risk such as driving without a seat belt, neighbors of potential sites have little control over risks from the site other than the extreme case of selling their homes and moving elsewhere.
- *Risks that seem fair are more acceptable than those that seem unfair.* If the benefits and negative impacts are spread unevenly over the community or county, people will perceive the risks of the facility as being unfair and less acceptable. For example, they are more likely to feel it is fair to be responsible for their own waste disposal, but unfair to accept wastes from another community.
- *Risk information that comes from trustworthy sources is more believable than information from untrustworthy sources.* If the public perceives a communicator as untrustworthy, then the information will be dismissed as biased, misleading, or otherwise unbelievable. Officials and individuals with vested interests in the outcome of the process will be seen as less credible, though some of the animosity can be diffused by admitting the biases up front.
- *Risks that are “dreaded” are less acceptable than those that carry less dread.* For example, groundwater contamination will be feared by the community more than risks from driving without seat belts, even when the former poses a lower risk to individuals. Because groundwater contamination is associated with cancer, which is dreaded more than a traffic accident, the perceived risks will be more serious.
- *Risks that are undetectable create more fear than detectable risks.* As an experienced war correspondent said at Three Mile Island, “at least in a war you know you haven’t been hit yet.” Similarly, risks with effects that take years to detect will be more likely to be feared.
- *Physical distance from a site influences the acceptability of risk.* Recent research found that people living near hazardous waste landfills were willing to pay between \$200 and \$500 per mile to move the landfill away from their neighborhood.
- *Rumor, misinformation, dispute and the sheer volume of information all may interact to give an incorrect perception of risk.* This “social amplification” is made worse by incomplete or inaccurate information, poor timing, and other social and political dynamics in the community.

USEPA, *Sites for Our Solid Waste: A Guidebook for Effective Public Involvement*, 1990

- Present technical information in language for a nontechnical audience.
- Discuss uncertainties and assumptions openly.

Although following these suggestions can help protect the credibility of technical information, it will not remove all challenges. If you are talking only to a leadership group, do not leave out any key interests. They will come back to haunt you later.

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## Addressing Negative Impacts, Both Perceived and Real

*Planning for controversy and mitigation is crucial.*

Some public policy positions in communities, no matter how sensitive to the concerns for residents, are bound to make some people feel they will be negatively impacted. Their concerns may be real or perceived. Few projects today are undertaken without some level of public controversy. If a solid waste facility is to be successfully sited today, it is necessary to find an immediate and direct means of resolving controversial issues. Planning for mitigation is a practical component of any solid waste project. Here are a few principles to follow in thinking about mitigation:

- The affected people want equivalent benefits—the people who experience impacts expect the attention of local government and may demand an equivalent share of the benefits of the project to offset the impact.
- The present level of risk is assumed to be zero. Any change in risk will be perceived as a potentially negative impact because people assume the present situation is without risk, or at least that risk has already been taken into account.
- Many mitigation issues are about procedure. When people are not sure of the impact of a project, they are very concerned with procedural protection and the credibility of decision makers.

*Common concerns requiring mitigation include*

- *process issues*
- *health risks*
- *environmental impacts*
- *community impacts.*

Common concerns about solid waste facilities that may require some form of mitigation include process issues, health risks, environmental issues, and local impacts, both perceived and real. Process issues include immediate access to facility management; representation on the facility's governing board; funds for independent review of technical studies; funds for a monitoring program. Environmental issues include air pollution, odor/litter, ground water, noise, dust, visual impact, wetlands protection, and waste flow reduction. Local impacts include negative neighborhood image/property values, traffic safety/congestion, and access/safety. There is often debate concerning whether local impacts, such as the effect of a landfill on property value, are real or only perceived. The economic impact on the project of funding additional technical studies or monitoring should be considered and discussed.

Developing an effective program to address impacts on the community requires careful planning. By carefully planning to address concerns, public controversy can be reduced significantly, which in turn increases the chances of successful siting. The basic steps in planning for impacts are

1. Identify the decision making-process for mitigation issues.
2. Identify the mitigation issues likely to arise.
3. Identify concerned segments of the public for each issue.
4. Identify forums for resolving mitigation issues with affected people.
5. Integrate required mitigation activities into the public involvement plan.

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## Evaluating the Effectiveness of the Siting Strategy

Project leaders make important decisions throughout the siting process based upon their judgment of the effectiveness of specific siting activities. Although there is no substitute for good judgment, evaluation can be a useful manage-

*Evaluating the process helps identify and address problems.*

ment tool to provide timely, cost-effective information that will improve the effectiveness of major siting activities.

Evaluation is not an easy task. Many of the effects of the siting strategy will be difficult to measure; the strategy may succeed for one objective while failing on another. Evaluation may not be able to provide all of the answers, but it can provide important feedback.

Evaluation strategies can take different forms, depending on the type of information collected, the scope of the issues addressed, and the measurement techniques used. It is important to identify points in the siting process where evaluation can be most cost effective. People often form opinions at the beginning of the siting process, so it makes sense to pay careful attention to early siting activities.

Evaluations have different objectives, and several different evaluation designs are available. Despite differing evaluations, however, the six-step process outlined below will help develop a solid foundation for improving most siting strategies.

1. Set goals and objectives.
2. Determine information needs for the evaluation.
3. Collect the information.
4. Analyze the data.
5. Draw conclusions.
6. Review and adjust goals and objectives.

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## THE PERMITTING PROCESS

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*Permitting holds facilities accountable for protecting human health and the environment.*

The last step in the facility siting process should be a decision to seek the necessary permits to construct and operate the facility. At this stage, the community must seek the approval of regulatory authorities, including one or more federal, state, and local agencies required by law to insure that proposed projects meet minimum technical and legal criteria. The number of permits needed for a solid waste management project is determined by local laws and the type of waste management facility being planned.

Federal and state agency reviews usually focus on direct facility impacts such as emissions to air and water, although many states also require an environmental impact statement or assessment considering all potential project impacts. Indirect impacts, such as the project's effect on land use planning or property values, are normally considered at the local level. In some states, a local decision or ordinance denying a permit for a solid waste management facility can be overridden by the state.

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### The Structure and Goals of the Permitting Process

*Permitting also ensures compliance with local public policy.*

Permitting ensures that a proposed solid waste management project will not unduly affect the health and environment of the community and that it will be consistent with local public policy. To meet this goal, regulatory agencies must review detailed technical analyses developed and submitted by the project sponsor. Agency reviews compare the details of a proposed project with minimum criteria set forth as rules in an administrative code or local ordinance.

In addition to internal agency review, the permitting process normally allows for public input through hearings and submittal and receipt of written comments. The type and extent of public hearing rights are usually determined by the law governing the review process. Options range from a limited right to comment about a proposed activity to the right to request a trial-type

proceeding at which evidence is presented and recorded and witnesses testify under oath and are cross-examined by attorneys.

After internal review with the benefit of public input, the reviewing agency must develop a written decision awarding a permit or disallowing the project. Reasons for the decision must be stated. Often, the issuing agency may grant a permit contingent upon compliance with a set of stated operating directives attached as permit conditions.

The entire permit proceeding is normally subject to review for correctness by a court. Opponents will usually use court review procedures to attempt to stop the project. To have the best chance of defeating legal challenges, it is important that a complete and credible technical record be developed from the inception of the project for presentation before the reviewing agency and that all procedural requirements and schedules be followed to the letter. Even successful permitting efforts can take many years and a significant commitment of project resources to complete.

*The entire permit proceeding is normally subject to review by a court. Completing a credible technical record from the inception of the project is crucial.*

## Solid Waste Management Activities Requiring Permits

When planning a solid waste management project, it is essential to accurately determine which permits will be needed for the project. This point cannot be overemphasized. An oversight concerning a permit can stop a project dead in its tracks. A schedule for applying for and obtaining permits must be developed and closely followed to guarantee the best chance of success.

To determine permit needs, consult federal and state regulatory agencies and local planning agencies early in the siting process. Contact other communities that have developed similar programs to seek advice. Employing legal counsel with special expertise in solid waste facility siting and permitting can also help avoid delays or problems.

*It is essential to accurately determine which permits are needed—a permitting oversight can stop a project dead in its tracks.*

### Source Reduction Programs

Efforts at source reduction may require new permits or permit revisions for equipment installed to reduce or capture emissions. If waste formerly emitted is now collected and stored, a waste storage permit may be needed. Make sure that the program meets regulations for employee and community right-to-know and emergency planning.

*Efforts at source reduction may require new permits or permit revisions.*

### Recycling

Constructing a materials recovery facility (MRF) will normally require zoning approvals. To avoid problems, the facility should be characterized as a processing center, not a salvage yard or junk yard. A building permit and compliance with local building codes are required. For special circumstances, such as staffing by developmentally challenged workers, additional permits may apply.

Trucks transporting recyclable materials may need transport permits. If materials are to be transported across state lines, the Interstate Commerce Commission (ICC) should be contacted to determine if permits are needed. Some states may require permits for operating a recycling center or for certain facility operations involving emissions to the air or water or requiring solid waste storage. (Also see Chapter 6, "Recycling.")

### Composting

Some states require compost operations to be permitted, especially municipal solid waste composting and large yard trimmings composting projects. Local zoning restrictions may also apply. Permits may also be needed for land application of yard trimmings or finished compost. (Also see Chapter 7, "Composting.")

*WTE plants usually require a variety of permits and zoning and building approvals.*

### **Waste-to-Energy**

Like a large materials recovery facility, a waste-to-energy plant is a major construction project, usually requiring a variety of zoning and building approvals. Air emissions, solid waste storage, and water pollution discharge permits may be needed depending upon facility type and design. Permits for hauling ash may also be required. (Also see Chapter 8, "Combustion.")

### **Landfilling**

States now require that landfills be permitted. A zoning variance or rezoning may also be necessary. Some local governments also have permitting requirements for landfills. (Also see Chapter 9, "Land Disposal.")

### **Collection and Transport**

Solid waste haulers usually need a permit from either the state or local government, or from both.

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