

3. CREATING ENVIRONMENTAL LAWS AND REQUIREMENTS THAT ARE ENFORCEABLE

INTRODUCTION

There are many approaches to managing environmental problems (see Table 3-1). The need for and scope of enforcement depends, in part, on which management approach or approaches are being used (see Figure 3-1). Some approaches are purely voluntary - that is, they encourage and assist change but do not require it. Other approaches are *regulatory* - that is, they require change. At the heart of regulatory approaches are *environmental requirements* - specific practices and procedures required by law to directly or indirectly reduce or prevent pollution. Table 3-2 lists some examples of the types of requirements typically used with command-and-control approaches to environmental management. While wholly regulatory (command-and-control) approaches generally have the most extensive requirements of all the management options, most of the other options introduce some form of requirements. Ensuring compliance with these requirements will require enforcement.

The first step in fostering compliance is to ensure that the environmental requirements themselves are *enforceable*, i.e., that laws provide the necessary authorities for enforcement, and that requirements are clear and practical. This chapter describes several approaches that can be used to make environmental requirements enforceable.

The "enforceability" of environmental requirements has a great impact on the effectiveness and cost of enforcement and on the ultimate level of compliance. For example, enforcement programs that do not have adequate legal authority will generally be ineffective. Requirements that rely on expensive, unreliable, or unavailable technologies will be difficult or impossible to comply with. Requirements that are unclear, imprecise, ambiguous, inconsistent, or contradictory may be difficult or impossible to enforce.

By considering enforceability early in and throughout the process of developing environmental requirements, policymakers can help make requirements as effective as possible. Raising problems after critical decisions have been made may be disruptive and may waste resources and cause significant delays. Involvement of both legal and technical staff is important to create enforceable requirements.

ENFORCEABILITY OF DIFFERENT APPROACHES TO ENVIRONMENTAL MANAGEMENT

Most of the approaches to environmental management described in Table 3-1 are based on some form of requirements that will likely require enforcement.¹ For example, some market-based approaches depend on enforcement to define the property being traded and to provide an incentive to use the market. A tradeable permit system needs some enforcement of the underlying requirements, otherwise there may be little incentive to comply with the requirements or to trade rights. With this system, inspectors will have to review records of permit transactions and adjustments to judge compliance. The system of labelling to enhance consumer choice may require enforcement to avoid inaccurate or misleading labels.

All regulatory approaches to environmental management will benefit if the underlying requirements are enforceable — that is, clear and practical. This chapter provides suggestions for making environmental requirements enforceable.

LAWS: THE FRAMEWORK FOR ENFORCEMENT

Authorities

¹Liability systems do not have explicit requirements. However, implicit requirements often develop as cases are brought to court and patterns are established about what activities justify which consequences. To be effective, liability systems generally need some enforcement by the government, nongovernment organizations, or individuals to gather evidence and develop legal cases.

TABLE 3-1. APPROACHES TO ENVIRONMENTAL MANAGEMENT

VOLUNTARY APPROACHES

Voluntary approaches encourage or assist, but do not require, change. Voluntary approaches include public education, technical assistance, and the promotion of environmental leadership by industry and nongovernment organizations. Voluntary approaches may also include some management of natural resources (e.g., lakes, natural areas, ground water) to maintain environmental quality.

COMMAND-AND-CONTROL

In command-and-control approaches, the government prescribes the desired changes through detailed requirements and then promotes and enforces compliance with these requirements. Table 3-2 describes types of requirements typically used in command-and-control approaches.

MARKET-BASED/ECONOMIC INCENTIVE APPROACHES

Market-based/economic incentive approaches use market forces to achieve desired behavior changes. These approaches can be independent of or build upon and supplement command-and-control approaches. For example, introducing market forces into a command-and-control approach can encourage greater pollution prevention and more economic solutions to problems. Market-based/economic incentive approaches include:

- Fee systems which tax emissions, effluents, and other environmental releases.
- Tradeable permits which allow companies to trade permitted emission rights with other companies.
- Offset approaches. These approaches allow a facility to propose various approaches to meeting an environmental goal. For example, a facility may be allowed to emit greater quantities of a substance from one of its operations if the facility offsets this increase by reducing emissions at another of its operations.
- Auctions. In this approach, the government auctions limited rights to produce or release certain environmental pollutants.
- Environmental labelling/public disclosure. In this approach, manufacturers are required to label products so that consumers can be aware of the environmental impacts of the products. Consumers can then choose which products to purchase based on the products' environmental performance.

RISK-BASED APPROACHES

Risk-based approaches to environmental management are relatively new. These approaches establish priorities for change based on the potential for reducing the risks posed to public health and/or the environment.

POLLUTION PREVENTION

The goal of pollution prevention approaches is to prevent pollution by reducing or eliminating generation of pollution at the source. The changes needed to prevent pollution can be required, e.g., as part of a command-and-control approach, or encouraged as voluntary actions.

LIABILITY

Some environmental management approaches are based on laws that make individuals or businesses liable for the results of certain actions or for damages they cause to another individual or business or to their property. Examples of liability-based environmental management systems include nuisance laws, laws requiring compensation for victims of environmental damage, and laws requiring correction of environmental problems caused by improper disposal of hazardous waste. Liability systems reduce or prevent pollution only to the extent that individuals or facilities fear the consequences of potential legal action against them.

TABLE 3-2. EXAMPLES OF ENVIRONMENTAL REQUIREMENTS

Ambient Standards

Ambient standards (also called media quality standards) are goals for the quality of the ambient environment (e.g., air, water). Ambient standards are usually written in units of concentration (e.g., the level of nitrogen dioxide in the air cannot exceed 0.053 parts per million). In the U.S., ambient standards are used as environmental quality goals and to plan the level of emissions from individual sources that can be accommodated while still meeting the areawide goal. Ambient standards may also be as triggers, e.g., when the standard is exceeded, monitoring or enforcement efforts are increased. Enforcement of ambient standards usually requires relating an ambient measurement to emissions or activities at a specific facility. This can be difficult.

Performance Standards (Emissions and Effluents)

These standards are widely used for regulations, permits, and monitoring requirements. Performance standards limit the amount or rate of particular chemicals or discharges that a facility can release into the environment in a given period of time. Performance standards provide flexibility because they allow sources to choose which technologies they will use to meet the standards. Often such standards are based on the output that can be achieved using the best available control technology. Some requirements introduce additional flexibility by allowing a source with multiple emissions to vary its emissions from each stack as long as the total sum of the emissions does not exceed the permitted total. Compliance with emission standards is measured by sampling and monitoring. Depending on the kind of instruments required, compliance can be difficult and/or expensive to monitor.

Technology Standards

These standards require the regulated community to use a particular type of technology (e.g., the "best available technology") to control and/or monitor emissions. Technology standards are particularly appropriate when the equipment is known to perform well under the range of conditions generally experienced by sources in the community. It is relatively easy for inspectors to determine whether sources are in compliance with technology standards: the approved equipment must be in place and operating properly. It may be difficult, however, to ensure that the equipment is operating properly over a long period of time. Technology standards can inhibit technological innovation and pollution prevention.

Practice Standards

These standards require or prohibit certain work activities that have significant environmental impacts. For example, a standard might prohibit carrying hazardous liquids in uncovered buckets. Like technology standards, it is easy for program officials to inspect for compliance and take action against noncomplying sources, but difficult to ensure ongoing compliance.

Information Requirements

These requirements are different from the standards described above in that they require a source of potential pollution (e.g., a pesticide manufacturer or facilities involved in generating, transporting, storing, treating, and disposing of hazardous waste) to develop and submit information to the government. Sources generating pollution may be required to monitor, report on, and maintain records of the level of pollution generated and whether or not it exceeds performance standards. Information requirements are often used when the potential pollution source is a product such as a new chemical or pesticide, rather than a waste. For example, a manufacturer may be required to test and report on a product's potential to cause harm if released into the environment.

Product or Use Bans

A ban may prohibit a product outright (e.g., ban the manufacture, sale, and/or use of a product) or may prohibit particular uses of a product.

Environmental laws will be most effective if they provide the authorities necessary for their own enforcement. Without sufficient authority, an enforcement program can be severely handicapped in its ability to create compliance. The credibility of an enforcement program will be eroded if violators can successfully challenge the authority of a program to take certain enforcement actions. Authorities that can be extremely important to an effective program include (see also Table 7-1 in Chapter 7):

- Authority to issue regulations, permits, licenses, and/or guidance to implement the law (see Table 3-3).
- Authority to waive or tailor requirements to facility-specific circumstances.
- Authority to inspect regulated facilities and gain access to their records and equipment to determine if they are in compliance.
- Authority to require that the regulated community monitor its own compliance, keep records of its compliance activities and status, report this information periodically to the enforcement program, and make the information available for inspection.
- Authority to take legal action against noncomplying facilities, for example:
 - Authority to impose a range of monetary penalties and other sanctions on facilities that violate the law.
 - Authority to impose criminal sanctions on facilities or individuals who violate the law (e.g., facilities that deliberately falsify data).
- Authority to correct situations that pose an imminent and substantial threat to public health and/or the environment.

Institutional Framework

Laws generally establish the institutional framework for their own enforcement by describing who will be responsible for implementing them. Without such a framework, it may be difficult to establish who is responsible for ensuring compliance has been achieved. For example laws can specify the roles and responsibilities of the various levels of government and the various government agencies or ministries (see Chapter 8). Lawmakers may also want to give citizens and nongovernment organizations representing citizens the right to bring a lawsuit for the purpose of enforcing the law. For example, environmental laws can allow citizens to sue polluters for failing to comply with the law, and/or the government agency for failing to fulfil its duties under the law. Such provisions have been an important means of enlisting citizen participation in the United States (see Chapter 8 for more information on citizen participation).

Related Laws Compelling Professional and Equitable Conduct

The credibility of government institutions is very important to establish a sound basis for voluntary compliance. Therefore, related requirements to prevent bribery, to prevent falsification of environmental data, and to ensure fair application of the law can be very important. Many countries make government officials criminally liable if they accept a bribe. Other countries protect the rights of facilities by ensuring that government inspections are based on some rational scheme or on a complaint or other piece of information that specifically suggests a violation has occurred.

Compatibility with Existing Laws

To be effective and respected, laws must be rational and not send conflicting signals. A new environmental law should be consistent with any existing environmental laws (unless it is intended to supersede these laws) and should reinforce and complement laws and policies in other sectors, such as:

- Health: food safety, occupational health and safety, consumer products, pesticide use, etc.
- Natural resource management: water, energy, minerals, forests, etc.
- Land use planning: transportation, development, siting, etc.
- Industry and commerce.
- Agriculture.

Structure and Criteria for Establishing Environmental Requirements

TABLE 3-3. EXAMPLES OF VEHICLES FOR IMPLEMENTING ENVIRONMENTAL REQUIREMENTS

- **Laws** provide the vision, scope, and authority for environmental protection and restoration. In some countries, laws also encompass the types of general requirements described by other countries in regulations (see below).
- **Regulations** establish (in greater detail than can be specified by law) general requirements that must be met by the regulated community, e.g., how harmful substances should be tested, registered, handled, monitored, emitted, discharged, and/or disposed of. These requirements generally apply at a national, state, or regional level (depending on the scope specified in the law). Some regulations are directly enforced. Others provide the criteria and procedures for developing facility-specific requirements via permits and licenses that provide the basis for enforcement. Some countries do not include the step of developing regulations but rely solely on facility-specific permits or licenses to implement their laws.
- **Permits** usually control activities related to construction or operation of facilities that generate pollutants. The requirements in permits are often based on specific criteria established in laws, regulations, and/or guidance.
 - **General permits** specify exactly what a class of facilities (e.g., gasoline stations) is required to do. General permits and licenses are used when it is impractical and/or unnecessary to issue a specific permit for each facility (e.g., when there are numerous small facilities that have very similar operations).
 - **Facility-specific** permits specify exactly what a particular facility is required to do. Permits often take into account the particular conditions at the specific facility.
- **Licenses** are similar to permits. Licenses are permits to manufacture, test, sell, and/or distribute a product, such as a pesticide, that may pose an environmental or public health risk if improperly used. Licenses may be general or facility-specific.
- **Guidance and Policies.** Often government regulators must interpret requirements, even those that have been carefully drafted, because not all applications can be anticipated. Written guidance and policies for interpreting and implementing requirements help ensure consistency and fairness as the requirements are applied in practice. Guidance and policies are also useful in situations where regulation is achieved solely by facility-specific permits or licenses (either because the regulatory system does not include more general requirements or because it is impractical to issue general requirements, e.g., due to wide variability in the regulated community). In this case, guidance and policies for creating requirements will help ensure consistency and fairness.

Some environmental laws contain requirements. Others specify a structure and criteria for establishing requirements; requirements are then developed separately. Requirements may be "general" (i.e., they apply to a group of facilities) or facility-specific.

- *General requirements* are most frequently implemented in the form of (1) laws, (2) regulations, or (3) general permits or licenses that apply to a specific class of facilities (e.g., dry cleaners) (see Table 3-3)². General requirements may apply directly to a group of facilities or they may serve as a basis for developing facility-specific requirements.
- *Facility-specific requirements* are usually implemented in the form of permits or licenses.

It can be simpler, in some respects, to enforce general requirements because inspectors do not have to determine what the applicable requirements are for each facility. However, in terms of gaining widespread compliance, a disadvantage of general requirements is that the burden of compliance often falls more heavily on some members of the regulated community than on others. Also, general requirements may need interpretation as to how they apply to particular facilities. Inequitable or unclear general requirements can lead to compliance problems. Facility-specific requirements may comprise a goal that sources are either more willing or better able to meet.

Different countries use different approaches to developing requirements. Figure 3-2 shows some possible approaches. Table 3-4 shows an example of the relationship between a law, regulation, and permit in the United States. This example illustrates how in the United States requirements become more detailed and specific as they are transformed from a law to a regulation to a permit.

REQUIREMENTS: MAKING THEM ENFORCEABLE

Many approaches, described below, are currently being used in different countries to help ensure that requirements will be enforceable.

²The terms law, regulation, permit, and license have different meanings in different countries. For example, some countries use the term "license" instead of "permits." For clarity and consistency, this text will adhere to the definitions provided in Table 3-3.

TABLE 3-4. EXAMPLE OF THE RELATIONSHIP BETWEEN AN ENVIRONMENTAL LAW, REGULATION, AND PERMIT IN THE UNITED STATES

In the United States, federal environmental laws outline requirements that are then further defined in federal regulations. Finally, federal regulations are implemented by the states through permits that specifically interpret and explain the requirements established in the laws and regulations. This example shows requirements developed under the U.S. Federal Water Pollution Control Act.

LAW: One part of this law states that "the Administrator [of the Environmental Protection Agency] shall require the owner or operator of any point source to . . . sample . . . effluents (in accordance with such methods . . . as the Administrator shall prescribe)."

REGULATION: A corresponding part of the regulations states: permits issued by the states must specify "required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including, when appropriate, continuous monitoring . . ."

PERMIT: A corresponding part of a permit in the Commonwealth of Virginia states: "Within three months of the effective date of this permit . . . and continuing quarterly for a period of one year the permittee shall collect 24-hour composite samples of the effluent from [the specified] outfall, except in the cases of volatile organics, phenols and cyanide analyses where grab samples are required."

Balancing Stringency and Feasibility

The ease and cost of compliance can greatly affect the degree of compliance. For example, facility managers may want to comply, but will not be able to if the requirements are too expensive or the necessary technologies are not available. Policymakers will need to balance the desire to create stringent and ambitious requirements with the burden the requirements will create for industry.

In theory, more stringent requirements mean larger and possibly quicker environmental protection and restoration. Too stringent requirements imposed too early in the life of a program can generate disrespect for the requirements among engineers and plant managers who must make compliance decisions. Similarly, government officials may be reluctant to enforce such requirements. Strict requirements are more likely to be challenged and delayed in court. Such delays undermine the credibility of an enforcement program. Thus, ambitious and impractical requirements can seriously hamper enforcement.

In response to these considerations, requirements may be creatively tailored in their stringency, i.e., different requirements are specified for individual facilities or different segments of the regulated community based on such factors as size, pollution volume, and environmental or public health risk posed by the pollution. Requirements may also be implemented in a phased approach. The first phase involves less stringent requirements that will not be too great a burden for the regulated community to meet. At a minimum, this phase will help eliminate the competitive advantage for polluters. Some time later a second phase involving more stringent requirements can be implemented. Additional phases can be implemented later if desired.

Improving the Climate for Compliance

Two practices that have helped win the respect and approval of the regulated community and/or individual facilities subject to the requirements are:

- Demonstrating Value. Environmental officials use recognized scientific methods to demonstrate that a requirement will produce measurable environmental improvements.
- Demonstrating Options and Feasibility. Environmental officials provide technical information on the different technologies or other alternative approaches that can be used for compliance. Officials may also supply information to demonstrate the economic feasibility of using these technologies. This helps convince the regulated community that the requirements are reasonable. It also invites companies that supply these technologies to make sure the technologies are available to facilities that are subject to the requirement.

These scientific activities help build a willingness to comply within the regulated community. In some cases, however, no appropriate technologies exist and the requirements force the development of suitable technologies. In such cases, compliance often takes longer to achieve.

General Requirements

General requirements (i.e., regulations and general permits and licenses) will be most effective if they closely reflect the practical realities of compliance and enforcement, for example, if they:

- Are clear and understandable.
- Precisely define which sources or activities are subject to requirements.
- Precisely define the requirements and any exceptions or variances³ in these requirements.
- Clearly address how compliance is to be determined by specifying test methods and procedures.
- Clearly state deadlines for compliance.
- Are flexible enough to be constructively adapted through individual permits, licenses, or variances to different regulatory circumstances.

³Environmental laws may contain provisions that allow a regulated source to petition the government for an exemption from a general requirement. This exemption is called a *variance* and contains specific terms and conditions similar to a permit. Facilities may request variances for many different reasons. For example, their operating conditions are different from those that were assumed when the standard was set, or peculiar physical circumstances (such as naturally contaminated intake water) make it impossible to comply.

- Are written clearly enough to be the basis of criminal prosecution (which is usually regarded as the most serious enforcement action).
- Are based on technology (e.g., control or monitoring equipment) and methodologies that are or soon will be available, reliable, and affordable.

Table 3-5 provides examples of basic questions that can be asked when general requirements are being drafted in law, regulations, and general permits or licenses to help make sure they will be enforceable.⁴

Size of the Regulated Community

The size of the regulated community can influence a program's ability to successfully enforce general requirements. The larger the regulated community, the greater the effort generally required for successful enforcement. Too large a regulated community can make it impossible to implement and enforce requirements. For example, a province in the Netherlands passed a law requiring companies that wanted to use a processing installation to dispose of their wastes to apply for an exemption. After the law passed, the government discovered that 100,000 companies producing wastes would need an exemption. Inspections alone would have required hiring an additional 200 to 300 inspectors. The provincial government decided to revise the regulation. Exemptions are no longer required. Companies must keep a record of their waste deliveries and periodically report information on the most hazardous wastes. Enforcement efforts now focus on the waste processors (about 1,000) rather than the waste producers.

Some pollution events involve a chain of facilities and/or individuals (e.g., manufacturers, distributors, users). In such cases, regulating the smallest "link" in the chain (e.g., manufacturers rather than users) can achieve the desired environmental results with much less effort.

Analyzing the Regulated Community's Ability To Comply

General requirements that are very specific, with little flexibility for modification when they are implemented at specific facilities, are easier to enforce but may not allow the economic flexibility that will encourage compliance. Policymakers will need to balance the advantage of specificity with the need for flexibility.

Both economic and technological factors determine how great a burden new requirements will pose to the regulated community. Some environmental programs (such as those in the United States) often commission an independent study to examine the economic and technological impact that proposed general requirements will have on the regulated community. Factors studied often include:

Economic Considerations:

- Which types of facilities are subject to the requirements?
- What equipment will be required to comply and how much will it cost to obtain, operate, and maintain?
- What changes in work practices will be necessary for compliance? How much will these changes cost?
- If the regulated community is required to monitor its own compliance activities, how much will this monitoring cost?
- Are there any short- or long-term economic benefits to the regulated community from compliance (e.g., income from recycled materials, development of more cost-efficient processes)?
- Is the regulatory scheme cost-effective compared to other approaches that could improve this segment of the environment?

Technological Considerations:

- What technologies may be used to comply?
- How reliable are these technologies?
- How available are these technologies?
- How easy is it to accurately operate these technologies?

⁴Not all the questions on Table 3-5 will be relevant to every situation. The table provides a tool to help clarify options and choices when drafting requirements.

TABLE 3-5. SAMPLE CHECKLIST FOR DEVELOPING ENFORCEABLE REGULATIONS, GENERAL PERMITS, AND GENERAL LICENSES

DEFINITIONS

- Does the regulation, general permit, or general license clearly define the regulated community, the regulated activities, and/or the regulated substances?
- Are any exceptions to defined terms narrow enough to avoid having the exceptions "swallow" the definitions?
- Are the definitions and exceptions precise enough so that enforcement personnel can identify instances of noncompliance?
- Are defined terms used consistently throughout the text of the regulation, general permit, or general license.
- Is the legal authority underlying the regulation, general permit, or general license clearly articulated?
- Are exceptions to the regulation, general permit, or general license defined precisely enough to make it clear which groups are exempted? If sources under a certain size are exempted, does the regulation identify how the size of a particular source is to be determined?

REQUIREMENTS (e.g., Standards)

- Are requirements or other end results measurable? Are the units of compliance clear?
- Are more enforceable requirements available, i.e., requirements that are easier to measure, less resource-intensive?
- Are exceptions clearly described? Is the calculation for exception clearly specified? If the regulation, general permit, or general license grants exceptions based on malfunctions or changes in local conditions, does it specify what emission levels may be excused, when, and who makes this determination?
- If changed circumstances may raise a requirement, does the regulation, general permit, or general license clearly specify what circumstances will change the requirement and how the requirement will be changed.
- If the requirement is an emission limit or concentration value, does it explicitly state the time frame associated with the limit (e.g., instantaneous, 3-hour average, daily)?

TABLE 3-5. SAMPLE CHECKLIST FOR DEVELOPING ENFORCEABLE REGULATIONS, GENERAL PERMITS, AND GENERAL LICENSES (continued)

MONITORING AND INSPECTION

- Does the regulation clearly state exactly what the regulated community is required to monitor? Do these requirements support the compliance goals of the environmental law? For example, if the compliance goal is to demonstrate that facilities are in compliance each day, does the regulation, general permit, or general license require daily self-monitoring and recordkeeping?
- What test methods are needed to determine whether a facility is in compliance? Are the methods clearly described? Are any allowable averaging times clearly specified?
- Does regulation, general permit, or general license make any attempt to falsify self-monitoring data as a separate enforceable violation?
- Does the regulation, general permit, or general license authorize inspection procedures that will be enable inspectors to gather data needed to determine compliance? Do these procedures cover entering a regulated facility, inspecting documents, and collecting samples?
- Will inspectors be readily able to determine which facilities are not in compliance?
- Will the requirements for inspection and self-monitoring help reduce enforcement costs and increase the effectiveness of inspections?

SELF-MONITORING/RECORDKEEPING/REPORTING

- Does the regulation, general permit, or general license provide a clear schedule for self-monitoring?
- Does the regulation, general permit, or general license state the methods to be used for self-monitoring?
- Does the regulation, general permit, or general license clearly state what data the regulated community is required to record and report?
- Will these data show whether or not a facility is in compliance? Will these data provide sufficient evidence to document a violation?
- Does the regulation, general permit, or general license provide a clear schedule and format for recordkeeping and reporting?

TABLE 3-5. SAMPLE CHECKLIST FOR DEVELOPING ENFORCEABLE REGULATIONS, GENERAL PERMITS, AND GENERAL LICENSES (continued)

- Are the reporting requirements frequent enough to allow timely response to a violation? Is the regulated community required to retain information long enough for enforcement purposes?
- Does the regulation, general permit, or general license make failure to maintain or report records a separate enforceable violation?
- Is the regulated community required to make records available to inspectors upon request?
- Are any exceptions to the recordkeeping and reporting requirements clearly spelled out?
- Will the requirements for reports, records, and inspection/monitoring techniques help reduce enforcement costs and increase the effectiveness of inspections?

DEMONSTRATING COMPLIANCE

- Does the regulation, general permit, or general license clearly describe what constitutes compliance and how compliance is determined? Is compliance determined by field inspections, desk reviews of reports submitted by the regulated community, or is the regulation, general permit, or general license self-enforcing?
- Does the regulation, general permit, or general license clearly state who (i.e., the government or the facility) is responsible for proving compliance or noncompliance? Can the enforcement program independently determine compliance? Can the program require the facility to perform certain tests and determine compliance?
- Does the regulation, general permit, or general license define time limits by which a member of the regulated community must reach compliance? Do the time periods have specified beginning and end points? If compliance is defined by occurrence of an event, rather than by a date, is the event discrete enough for an inspector to determine whether the facility is in compliance?
- Is the evidence required to prove a violation clearly described? Can third party data be used as evidence? Does the regulation, general permit, or general license describe the extent to which an inspector can use professional judgment in determining whether a facility is in compliance?
- If different government levels are involved in enforcement programs, does the regulation, general permit, or general license clearly describe the responsibilities of each level of government?

Involving the Regulated Community and Other Interested Parties

Involving the regulated community in developing general requirements helps create support and reduce resistance and conflict. It can also make general requirements more practical and therefore more enforceable, and it publicizes the requirements at an early stage, which sets the stage for compliance. There are three basic ways to involve the regulated community: formal comment, informal negotiations, and field testing (see Table 3-6). Specific procedures and schedules for each approach are helpful to avoid the possibility that involvement of the regulated community could be used to delay implementation or unduly influence the results. Involving the nonregulated community (e.g., the general public and nongovernment organizations) can also be very helpful (e.g., to build public support — the importance of which is discussed in Chapter 5 — and to solicit creative ideas from knowledgeable groups).

Involving Enforcement Officials

The government personnel involved in drafting general requirements may not be involved in enforcement activities. Thus, the experience, wisdom, and concerns of both legal and technical staff involved in enforcement are not automatically available to the regulators.

Generally, special institutional channels and procedures are beneficial to ensure that enforcement staff will provide input as general requirements are being drafted. For example, a system could be set up so that enforcement program officials can track the status of projects to develop requirements. Special requirement development committees can be created that include both policymakers and enforcement officials. The committee can include representatives of all government levels (national, regional, provincial, local) that may be involved in enforcing the requirements. The committee members could be responsible for ensuring that the appropriate individuals within the enforcement program were involved in drafting and reviewing the requirements.

Comments on the proposed requirements and formal written responses to them are most useful if they are provided in writing to ensure that they are clearly understood and to establish a written record of the decisionmaking process.

Those responsible for developing general requirements can commission special studies to specifically analyze whether there might be problems enforcing the proposed requirements. Such a study should be kept confidential since it could reveal weaknesses in enforceability which could undermine enforcement efforts if publicized.

Lessons learned about what makes existing requirements enforceable or unenforceable in a particular region or country can be recorded, studied, and communicated to those involved in developing new requirements. For example, selected general requirements could be reviewed one year after they became effective to analyze their enforceability and to make any adjustments to increase enforceability. Mechanisms could be created to "fix" existing general requirements if they are found to be difficult to enforce. It is also useful to establish an expedited process that can be used to correct specific types of deficiencies by making limited revisions to general requirements.

Coordinating with Other Environmental Requirements and Programs

Environmental requirements under one law can interfere with successful compliance under another law. For example, in the United States, regulations required electronics firms to stop chemical solvents in tanks from leaking into the ground water. Some firms complied by releasing solvents into the air, which created an air quality problem. In the Netherlands, flue gas scrubbing to reduce harmful air emissions can lead to discharges of contaminated water; treatment of contaminated wastewater can lead to yet another waste product requiring responsible processing.

Several rulemaking practices can be used to avoid such unintended effects. First, environmental laws can require policymakers drafting general requirements to specifically consider whether such effects are possible. Second, individuals who are knowledgeable about the different environmental areas can review the requirements. Third, the regulated community can be studied to see whether compliance could potentially shift the pollution from one environmental medium to another. If cross-media effects are discovered, the requirements can be modified to prevent or minimize these effects. Finally, requirements can be defined for all media at once.

**TABLE 3-6. WAYS TO INVOLVE THE REGULATED COMMUNITY
IN DEVELOPING GENERAL REQUIREMENTS**

Informal Consultations Policymakers can consult with key representatives of the regulated community and nongovernment organizations informally before developing general requirements. These consultations can be helpful in sorting out future problems early, and in eliminating resistance.

Formal Comment U.S. legal systems require the federal government to publish draft regulations and solicit comments from the regulated community and the public. Widely distributed, low-cost government periodicals provide advance notice that new regulations are being developed and announce when they will be available. Any organization or individual can easily obtain and review the proposed regulations when they are issued.

Written comments from the public are usually accepted for a limited period of time (30 to 90 days in the United States) after the proposed regulation has been issued. The environmental agency prepares and publishes detailed responses to the comments. Many of the comments directly concern the difficulty or unanticipated effects of compliance. These comments provide regulators with an opportunity to rethink their approach. The formal responses to comments reassure commentors that their comments were considered.

Field Testing In *field testing*, specific members of the regulated community volunteer to test general requirements to determine, for example, whether the requirements are clear and understandable, and/or the ease and cost of compliance. Policymakers can then make changes to the general requirements before they are finally implemented. Though field testing can lengthen the total time it takes to develop a general requirement, it can expose weaknesses that might otherwise render it unenforceable. As of 1991, field testing is being pilot-tested for use in the United States.

Not all proposed requirements can realistically be field-tested. For example, those requiring substantial investment in new equipment may be impractical for field testing because of the cost and time required for planning, permitting, construction, and start-up of new equipment. Field testing may be more appropriate for requirements that concern operation and maintenance of existing equipment; recordkeeping and reporting by regulated sources; new methods of testing compliance; and/or the ability of existing equipment to meet new standards. Field testing of these types of requirements generally should not delay the process of developing the requirements or pose too great a financial burden on the prospective regulatory community.

Where field testing is used, policymakers will need to determine who will fund it - the enforcement program, the test facility itself, or a trade association representing the regulated community.

Facility-Specific Requirements

Ensuring Enforceability

Facility-specific requirements are usually communicated through permits and licenses. They are often based on specific criteria established in laws, regulations, and/or guidance, but are customized to the specific conditions at the particular facility receiving the permit or license. These documents may cover only certain requirements (e.g., those concerning a single environmental media) or may be comprehensive documents covering all requirements that the facility must meet.

Permits and licenses are intended to be practical documents that require or prohibit specific activities. To be enforceable, permits and licenses must generally be clear, precise, and unambiguous. Several practical steps can be taken to help ensure permits and licenses have these qualities:

- Train permit- and license-writers in the permit- and license-writing processes.
- Use standard forms to ensure that each permit and license contains all essential information.
- Where appropriate, use "model" permits or licenses. A model permit/license contains requirements that are generally applicable to a specific type of facility. The model is then slightly modified by the permit- or license-writer to develop an individual permit for a specific facility.
- Provide clear instructions to the permit- or license-writer about how to prepare the permit or license.

Table 3-7 provides a checklist that permit- and license-writers can use to ensure the enforceability of permits and licenses. Writers of facility-specific requirements will need to consider whether the permit conditions might conflict with those in any of the facility's existing permits or licenses. Conflicts and contradictions between different environmental permits and licenses can invite noncompliance. Multimedia permits or licenses that encompass all relevant environmental requirements in a single document can overcome this potential problem. Multimedia documents may also enable permit- and license-writers to prioritize requirements based on human health/environmental risk, the facility's resources for compliance, and feasibility.

The Permitting and Licensing Process

The credibility of environmental enforcement programs will generally be enhanced if facility-specific requirements are created as quickly as possible once an environmental program is in place. A long lag time can give the appearance of a weak environmental program and delay the application of environmental laws. Where start-up resources are limited, policymakers may wish to at least implement requirements for facilities that emit large quantities of and/or the most toxic pollutants as soon as possible.

The process for writing permits and licenses varies from one country to another, but generally includes the following steps:

- The facility provides information about its operations and emissions to the government agency.
- A permit- or license-writer reviews the information and requests additional information if necessary.
- The permit- or license-writer may inform interested parties (e.g., the local community) that a permit or license is being prepared.
- The permit- or license-writer may provide an opportunity for any concerned party to comment on whether a facility should receive a permit or license and what the requirements should be.
- If necessary, a negotiation process is used to resolve any disputes between the permit- or license-writer, facility, workers, local community, and/or other potentially affected parties.
- After sufficient information-gathering, discussion, and negotiation, the permit- or license-writer decides whether to issue the permit or license.
- There may be a sanction if the permit- or license-writer discovers that the applicant submits false, incomplete, or misleading information.

The permitting and licensing processes provide an opportunity to make sure the facility clearly understands what the requirements are and why it is important, both from an environmental and legal perspective, to meet them. The city of Amsterdam in the Netherlands uses a system of "prior consultations" to promote compliance. When a company seeks a permit, the municipal government inventories the company's

TABLE 3-7. SAMPLE CHECKLIST FOR DEVELOPING ENFORCEABLE PERMITS

GENERAL

- Is the length of time that the permit will be valid clearly stated? Is a date specified to indicate when the permit must be reissued and when an application for a new permit should be filed?
- Does the permit contain a provision stating that the permit must be modified if ownership of the facility changes, or if the facility makes changes to its regulated processes?
- Do the permit conditions conflict with conditions in any other permits that the facility has?
- Is there a provision specifying that the permit can automatically be revoked if it is discovered that the applicant deliberately submitted false, misleading, or incomplete information during the application process?
- Does the permit state whether the owner or operator will be liable for noncompliance?

REQUIREMENTS

- Are requirements or other end results measurable? Are the units of compliance clear?
- Does the permit specify that a modification will be required if the requirements or criteria change?
- If the requirement is an emission limit, does the permit explicitly state the time frame associated with the limit (e.g., instantaneous, 3-hour average, daily)?

MONITORING AND INSPECTION

- Does the permit clearly state exactly what the facility is required to monitor? Do these requirements support the compliance goals of the environmental regulation?
- What test methods are needed to determine whether the facility is in compliance? Are the methods clearly described and available to the permittee? Are any allowable averaging times clearly specified?
- Does the permit make any attempt to falsify self-monitoring data a separate enforceable violation?

TABLE 3-7. SAMPLE CHECKLIST FOR DEVELOPING ENFORCEABLE PERMITS (continued)

- Does the permit provide a clear schedule for self-monitoring?
- Does the permit authorize inspection procedures that will enable inspectors to gather data needed to determine compliance? Do these procedures cover entering a regulated facility, inspecting documents, and collecting samples?
- Will inspectors be readily able to determine which facilities are not in compliance?
- Will the requirements for inspection and self-monitoring help reduce enforcement costs and increase the effectiveness of inspections?

RECORDKEEPING/REPORTING

- Does the permit clearly state what data the facility is required to record and report?
- Will these data show whether or not a facility is in compliance? Will these data provide sufficient evidence to document a violation?
- Is the facility required to report noncompliance with permit requirements? If so, does the permit specify a deadline for reporting noncompliance and to whom noncompliance should be reported?
- Does the permit provide a clear schedule and format for recordkeeping and reporting?
- Does the permit specify to whom the information should be reported?
- Are the reporting requirements frequent enough to allow timely response to a violation? Is the facility required to retain information long enough for enforcement purposes?
- Does the permit make failure to maintain or report records a separate enforceable violation?
- Is the facility required to make records available upon request?
- Are any exceptions to the recordkeeping and reporting requirements clearly spelled out?
- Will the requirements for reports, records, and inspection/monitoring techniques help reduce enforcement costs and increase the effectiveness of inspections?

**TABLE 3-7. SAMPLE CHECKLIST FOR DEVELOPING
ENFORCEABLE PERMITS (continued)**

DEMONSTRATING COMPLIANCE

- Does the permit clearly describe what constitutes compliance and how compliance is determined?
- Does the permit clearly state who is responsible for proving compliance or noncompliance (as established by applicable law)?
- Does the permit define time limits by which the facility must reach compliance? Do the time periods have specified beginning and end points? If compliance is defined by occurrence of an event, rather than by a date, is the event discrete enough for an inspector to determine whether the facility is in compliance?

activities, the potential pollution, and the environmental measures that should be taken. Other relevant government officials (e.g., from the Occupational Safety and Health Inspectorate, the Water Quality Manager, the Fire Department, the Environmental Inspectorate) are invited to participate. The inventory and draft and final permits are explained in detail to the company management. The process is designed to promote compliance by convincing the company of the necessity for taking environmental measures and by making it clear that noncompliance will be met with corrective action.