

# Principles of Environmental Compliance and Enforcement Handbook

## Chapter 7: Monitoring Compliance

International Network for  
Environmental Compliance and Enforcement

April 2009

The full text of the Principles Handbook is available online at <http://www.inece.org/principles>.

## **7. MONITORING COMPLIANCE**

### **7.1 Introduction**

Monitoring compliance is essential to the success of an environmental management program. The collection and analysis of compliance information improves decision making through the following:

- Evaluating program progress by establishing compliance status.
- Detecting and correcting violations.
- Supporting information strategies to promote compliance.
- Providing evidence to support enforcement actions and deter non-compliance.

There are four primary sources of compliance information discussed in this chapter:

- Inspections.
- Monitoring environmental conditions near a facility.
- Self-monitoring, recordkeeping, and self-reporting by the regulated community.
- Citizen monitoring.

These are described in detail below. Box 7-1 summarizes the advantages and disadvantages of these four information sources. Additional information may come from reports of other national, regional, provincial, or local agencies that have related jurisdiction over the facility; requests for modifications to permits or licenses; and environmental audit reports provided by the facility. However, as information on compliance status is gathered, an enforcement program needs a system (computerized if possible) to store, access, and analyze the information as needed.

<b>BOX 7-1: COMPARING SOURCES OF COMPLIANCE INFORMATION</b>		
<b>INFORMATION SOURCE</b>	<b>ADVANTAGES</b>	<b>DISADVANTAGES</b>
<b>Inspections</b>	Provide the most relevant and reliable information.	Can be very resource-intensive.
<b>Monitoring Environmental Conditions Near a Facility</b>	Useful for detecting possible violations without entering the facility.  Useful for determining whether permit or license requirements are providing adequate environmental protection.	Can be difficult to demonstrate a connection between the pollution detected and a specific source.  Difficult or impossible to obtain precise information.  Resource-intensive in areas of multiple sources.
<b>Self-Monitoring, Self-Recordkeeping, and Self-Reporting by the Regulated Community</b>	Provide extensive information on compliance.  Shift economic burden of monitoring to the regulated community.  May increase level of management attention devoted to compliance within a facility.	Rely on integrity and capability of source to provide accurate data.  Place economic burden on the regulated community and increase paperwork.
<b>Citizen Monitoring</b>	Can detect violations that are not detected by inspections, industry self-monitoring, and reporting.	Sporadically conducted.  Cannot control amount, frequency, or quality of information received.  Only a few violations are noticed by citizens.  May require resources to respond to erroneous or irrelevant complaints.

**7.2 Inspections**

Inspections are the backbone of most enforcement programs.<sup>26</sup> Inspections are conducted by government inspectors or in some cases by independent parties hired by and reporting back to the responsible agency. The inspector’s role is not to interpret the law and

make the final institutional or agency determination of compliance, but rather to gather facts about a facility, collect and analyze documentation, and record observations. The inspector then organizes those observations and supporting documentation into a report for review against standards set forth in law.

Inspectors plan inspections, gather data in and around a particular facility, record and report on their observations, and sometimes make independent judgments about whether the facility is in compliance. Inspection activities may include, but are not limited to: observing and documenting observations; sampling, measuring, and photographing; coring, drilling, and excavating; reviewing and copying records; and seizing equipment, products, materials, or records. Inspections can be very resource-intensive and therefore require careful targeting and planning. By standardizing inspection procedures, enforcement officials can help ensure that all facilities are treated equally and that all the appropriate information is gathered. By specifying deadlines for inspection reports, program managers can help ensure that reports can be made available to enforcement personnel without delay if there is a possibility of non-compliance.<sup>27</sup>

#### **BOX 7-2: BENEFITS OF INSPECTIONS IN VIETNAM<sup>28</sup>**

In 1997, Vietnam for the first time implemented a large-scale, nation-wide inspection for compliance with environmental requirements. This process entailed close coordination between branches of the national government (*e.g.*, environment, energy, defense), between central and local levels of government, and with the mass media. The investigations helped to increase the role and influence of the environmental inspectors in society and helped introduce the Law on Environmental Protection to the public.

### **7.3 Audits versus Inspections**

Audits are similar to inspections, but whereas inspections are generally conducted by the government or its agents, audits are conducted for or by a facility for its own purpose and benefit.<sup>29</sup> Audits may be conducted by internal staff or external, independent consultants. These audits may be part of a larger management system, and may be done as a way to get certification (such as ISO certification) or to show suppliers, clients, or investors that the company is complying with its environmental responsibilities. During an inspection, if violations are found, the government follows standard procedures to ensure that the evidence collected will be upheld in court. In contrast, when an audit uncovers violations, evidence generally is not collected, as there is not an enforcement response to the violations. The facility may choose to correct the violation on its own, or may elect to report the violation to the regulatory agency.

Some countries have programs designed to motivate facilities to come forward and admit to their violations by offering reduced penalties or shields from prosecution. Audits and environmental management systems are discussed in more detail in Chapter Six.

**BOX 7-3: INSPECTION POWERS IN GAMBIA<sup>30</sup>**

The 1994 Hazardous Chemicals and Pesticides Control and Management Act gives inspectors broad powers to investigate potential violations of laws governing pesticides and other hazardous chemicals. The Act provides that an “inspector may, in the performance of his duties...at all reasonable times without [a] warrant enter on any land, premises or vehicle where a chemical or pesticide is or may be reasonably suspected to be manufactured, stored, sold, distributed or used to determine whether the provisions of this Act are being complied with.” Moreover, the inspector may “take samples of any articles and substances to which this Act relates and, as may be prescribed, submit such samples for test and analysis.”

#### **7.4 Types of Inspections**

Inspections may be “routine” (there is no reason to suspect that the facility is out of compliance) or “for cause” (a particular facility is targeted because there is reason to believe it is out of compliance).<sup>31</sup> Inspectors may notify the facility prior to inspection or arrive unannounced.

There are many levels of inspection. (See Box 7-4). At the most basic level, an inspector can simply walk through a plant. A more complex and time consuming inspection might require an inspector, or multiple inspectors, to spend time in the facility to observe operations, interview plant personnel, and take samples for analysis.

Inspection goals include:

- Identifying specific environmental problems.
- Making the source aware of any problems.
- Gathering information to determine a facility’s compliance status.
- Collecting evidence for enforcement.
- Ensuring the quality of self-reported data.
- Demonstrating the government’s commitment to compliance by creating a credible presence.
- Checking whether facilities that have been ordered to comply have done so.

Inspections may focus on one or more of the following questions:

- Does the facility have an up-to-date permit or license?

- Has all required pollution monitoring or control equipment been installed?
- Is the equipment being operated correctly?
- Are records of self-reported data properly prepared and maintained?
- Is the facility properly conducting required sampling and analysis?
- Do the facility's management plans and practices support the required compliance activities?
- Are there any signs of willful violation of regulations or falsification of data? Signs could include conflicting data, conflicting stories from different employees at the same facility, monitoring data for which there is no supporting record or documentation, claims that employees are ignorant of the regulations when company files show knowledge of these requirements, and complaints from employees or citizens in the local community.

#### **BOX 7-4: THREE LEVELS OF INSPECTIONS**

##### **Level 1: Walk-Through Inspection**

This type of inspection is limited to a quick survey of the facility. Inspectors need only to walk through the facility to verify the existence of certain features, such as control equipment or a records repository, or to observe work practices and housekeeping. These inspections establish an enforcement presence, and can also serve as a screening process to identify facilities that should be targeted for more intensive inspection.

##### **Level 2: Compliance Evaluation Inspection**

This level involves a thorough inspection of the facility but does not include sampling. It may include visual observations like those in Level 1; review and evaluation of records; interviews with facility personnel; review and critique of self-monitoring methods, instruments, and data; examination of process and control devices; and collection of evidence of non-compliance.

##### **Level 3: Sampling Inspection**

This includes the visual and record reviews of the other inspection levels, as well as pre-planned collection and analysis of physical samples. These inspections are the most resource-intensive.

## **7.5 Steps in the Inspection Process**

Most environmental management programs use a standardized set of steps for their inspection process or minor variations thereof. Inspections usually begin with an opening conference to explain the inspection process to the facility.<sup>32</sup> Some inspections end with a closing conference, in which the inspector may make facility managers aware of any violations,

prescribe corrective actions, and explain the consequences of continuing non-compliance.<sup>33</sup> Some countries' enforcement programs do not allow closing conferences because they want to avoid the risk that information given by the inspector to the facility may somehow compromise future legal action. Other countries' legal systems require inspectors to leave written summaries of observed violations, putting inspected companies on notice. Box 7-5 contains an example of the phases of the inspection process. The following sections take a closer look at several of the phases.

#### **BOX 7-5: PHASES OF THE INSPECTION PROCESS<sup>34</sup>**

##### **1. Targeting Inspections**

Inspection sites are selected using four criteria: 1) random selection of sites from all of the identifiable members of a regulated community, frequently referred to as a "neutral inspection scheme;" 2) a selection that emphasizes a specific sector of the identifiable regulated community, usually based on enforcement history, potential threat, or other clearly researched criteria; 3) a selection based on information received from the public or other external sources such as a tip or complaint; and 4) emergency responses. An agency must explain how it weighed each of these criteria in a compliance monitoring report made available to the public to show it that the selections were made in a fair and transparent manner.

##### **2. Preparation of an Inspection Plan**

This phase entails tasks such as reviewing all available information, contacting everyone who may have relevant information, getting administrative clearances, and making necessary arrangements if samples need to be taken.

##### **3. Entry into Facility**

Most public agencies seek to obtain consensual entry first. If the entry is denied, they try to explain again why the entry is necessary. If denied again, authorization to enter may be granted by a legal authority.

##### **4. Opening Conference**

The purpose of an opening conference is to let the facility know what the agency plans to do and why, and also to learn more about the facility operation, plant layout, management structure, plant processes, plant safety, and other information relevant for the investigation.

##### **5. Collecting Evidence in the Field**

Evidence is anything that provides verifiable information that can be used to establish, certify, prove, substantiate, or support an assertion. It can include physical samples, photographs, and copies of facility documents. The two most common methods of collecting evidence in the field are facility walk-throughs and process-based investigations.<sup>35</sup> Interviews are also one of the inspector's most useful tools for gathering information.

## **6. Collecting Evidence from Records and Reports**

A record is any means of memorializing an event, person, place, or thing. Inspectors have the authority to review relevant firm records to determine compliance. The following are some common records that may be of relevance for inspectors: annual reports; production records; shipping reports; manifests; inventory records; sales reports; process records; permits; quality control records; waste management records; documentation of environmental management systems; employee training records; self-monitoring records; discharge monitoring reports; licenses; articles of incorporation; property records; logs; maintenance records; spill reports; safety records; and accident reports.

## **7. Closing Conference**

The closing conference provides an opportunity to confirm inspectors' observations and review preliminary findings with facility personnel. This may also be the opportunity to explain observed violations to the company.

## **8. Report Writing**

The objective for generating the report is to organize and coordinate all documentation and potential evidence in a comprehensive, understandable, and usable manner.

## **9. Referral for Follow-up/Enforcement**

Examples of follow-up actions include: issuing a letter to the company; informing other inspecting bodies of the findings and observations; planning a follow-up inspection; writing notices; and possibly initiating a criminal or civil action to induce compliance.

## **10. Appearance as a Witness**

The inspector may be called as a witness if civil or criminal enforcement actions are taken.

### 7.5.1 Step 1: Targeting Inspections

More frequent inspections generally promote improved compliance. However, most enforcement programs generally do not have enough resources to adequately inspect all regulated facilities.

A two-tiered monitoring approach has proven effective in reducing environmental management costs while maintaining an adequate level of deterrence. Under this approach, "high risk" targets—those firms considered likely to be in non-compliance—receive more frequent, thorough, and expensive inspections than "low risk" targets. In selecting sources for more intensive inspections, enforcement programs can consider several factors:

- A source's potential to harm the environment.
- The complexity of the inspection needed to evaluate compliance.
- The compliance history of the source.
- The compliance history of similar sources.

- The availability of self-reported data.

Another strategy for conserving program resources is to start with a less expensive inspection. If the source is in violation, enforcement action should be taken to require the source to correct the violation and conduct more extensive self-monitoring. If the monitoring data indicates a continued violation or if there is any other reason to suspect a violation, another more intensive inspection should then be conducted. This shifts some of the burden of data gathering to the source and postpones resource-intensive inspections until concerns raised in lower-level inspections and monitoring warrant greater expense. Some environmental management programs offer to limit enforcement actions, and subsequent penalties, in exchange for immediate correction of violations discovered during inspections.

Other considerations in targeting inspections include:

- The need to include a random component in any inspection program. This will help reveal the true scope and nature of different risks by examining problems unlikely to be revealed by targeted activities. Random inspection activities can include the location, timing, or scope of the inspection.
- The need to address multi-media issues. Most inspection programs have traditionally addressed a single environmental medium, such as air, land, or water. Many government agencies have started stressing multi-media inspections, sometimes by combining inspections from different agencies.

### 7.5.2 Step 2: Preparation of an Inspection Plan

Developing an inspection plan before going on site helps ensure the quality and value of the inspection. An inspection plan provides an organized step-by-step approach to conducting the inspection. Some flexibility, however, is important to allow the inspector to adapt to unanticipated situations at the facility. The inspection plan must clearly establish duties for each member of the inspection team. This promotes efficiency, as well as avoiding any confusion. Box 7-6 lists some common elements of an inspection plan.

### 7.5.3 Step 3: Collecting Evidence

The inspector is responsible for gathering information to determine whether a facility is in compliance and for collecting and documenting evidence of any violation. This evidence is used to support the development of enforcement cases, as well as to help the inspector prepare for and give testimony when required. Therefore, inspectors are required to follow appropriate procedures for preservation of evidence. If standard procedures are not followed, then there is

a risk that the evidence may be rejected in a court of law and that the time and expense invested in building a case will have been wasted. Standard checklists are often developed for different types of inspections to ensure that the inspections properly cover all of the necessary aspects and are fair and objective. Sometimes inspectors are responsible for determining whether a violation has occurred, while other times, program staff or legal staff make this determination. Involvement of legal staff is essential in interpreting requirements, to determine whether there has been a violation. Because of the potential risk to subsequent enforcement cases, most inspectors in U.S. enforcement programs do not make decisions about whether a violation has occurred.

#### **BOX 7-6: ELEMENTS OF AN INSPECTION PLAN**

##### **Objectives**

- What is the purpose of the inspection?
- What is to be accomplished?

##### **Tasks**

- What information will be reviewed (e.g., permits, licenses, regulations, previous inspection reports, and information on the history of compliance)?
- What coordination with laboratories, other environmental programs, lawyers, or government agencies is required?

##### **Procedures**

- Which specific facility processes will be inspected?
- Have inspectors established a right of entry to the facility?
- Will the inspection require special procedures?
- Has a quality assurance/quality control plan been developed and understood?
- What equipment will be required?
- What are the responsibilities of each member of the team?

##### **Resources**

- What personnel will be required?
- Has a safety plan been developed and understood?

##### **Schedule**

- What will be the time requirements for and order of inspection activities?
- What will be the priorities? What *must* be done, and what is *optional* to complete?

#### 7.5.4 Step 4: Written Inspection Report

The inspector must record notes on every aspect of the inspection and gather additional evidence, such as physical samples, photographs, and copies of facility documents. As soon as possible following the inspection, the inspector must prepare an inspection report which references any additional evidence collected (photographs, documents, etc.). The final report will serve as the basis for any testimony by the inspector and will likely be used as evidence if enforcement actions are taken.

Prior to finalizing the report, any samples collected must be sent to a laboratory for analysis, in accordance with the protocol outlined by the agency to ensure reliable evaluation of samples. It is also important to establish and preserve the chain of custody. The evidence should remain under the care of an appropriate authority in order to reduce the possibility of the evidence being corrupted. The subject of the inspection, however, may be given the right to have the samples examined by their own experts, provided that rules and procedures are in place to protect the evidence from tampering.

Analytical data should be interpreted and presented in the final inspection report. Elements of an inspection report may include:

- The specific reason for the inspection.
- Participants in the inspection.
- Statement that all required procedures for conducting the inspection were obeyed.
- A chronological list of all actions taken during the inspection.
- An inventory of the evidence obtained during the inspection.
- Observations made during the inspections.
- The results of sample analyses related to the inspection.

### **7.6 Building an Effective Inspection Program**

#### 7.6.1 Recognizing the Important Role of Inspectors

Inspectors have great influence on the success of an environmental management program. They are responsible for identifying facilities that are out of compliance, and for gathering evidence for enforcement actions. They are often the only environmental officials that a facility manager will ever meet in person and may serve as the key witnesses in enforcement cases.

It is generally desirable for environmental management programs that the inspectors carrying out formal inspections be different from those who perform the compliance promotion

and assistance programs. A program should not assign inspectors to monitor the same facilities where they have provided special technical assistance. This will help minimize the risk (and appearance) of preferential treatment by agency staff members who have spent considerable time and energy consulting with a firm. In some instances, however, resource constraints and the need for particular expertise make this difficult. For example, there may be a limited number of energy plant inspectors with the requisite technical expertise so an agency may not have enough manpower to change inspectors every visit. In cases such as these, the agency should set a goal of changing the inspector responsible for that facility as often as practicable – perhaps every few years.

### 7.6.2 Training

Inspectors require training in a broad range of skills: legal, technical, administrative, and communication. (See Box 7-7). They need to be technically competent in the subject matter of the inspections they perform and skilled in obtaining crucial facts and collecting and preserving evidence of non-compliance. They also need to be skilled in managing projects, working as part of a team, and communicating effectively. Communications range from entry conversations to complex cross-examination in cases of serious violations. It is useful if inspectors are trained in negotiation techniques and conflict resolution, because some inspections may become adversarial. In such cases, inspectors must be able to prevent a hostile situation from escalating. The training and integrity of inspectors are critical to effective enforcement programs.

### 7.6.3 Support Resources

The kinds of equipment required to support an inspection vary depending on the type and purpose of inspection. Equipment needed may include:

- **Safety equipment** to protect the inspector from any hazards that may be encountered during the inspection.
- **Documentation equipment** to record information and evidence, including cameras, film, pocket calculators, tape measures, and logbook.
- **Sampling equipment** to take samples of soil, water, or air.
- **Equipment to transport samples** to avoid contamination.
- **Analytical equipment** to examine the environmental samples taken at the facility.

## **BOX 7-7: ELEMENTS OF INSPECTOR TRAINING**

### **Basics of Compliance and Enforcement**

- Introduction to Environmental Compliance
- Summary of Environmental Requirements
- Components of an Enforcement Program
- Organizational Structure for Compliance and Enforcement
- Role of the Inspector/Field Investigator

### **Legal Aspects of Inspections and Enforcement**

- Enforcement Litigation
- Entry and Information-gathering Tools
- Evidence

### **Pre-inspection Activities**

- Pre-inspection Planning and Preparation
- Administrative Considerations for Inspectors

### **On-site Activities**

- Gaining Entry and Opening Conference
- Ensuring Inspector Health and Safety
- Records Review
- Physical Sampling
- Interviews
- Observations and Illustrations
- Closing Conference/Travel Security Measures

### **Post-inspection Activities**

- Reports and Files
- Laboratory Analysis
- Enforcement Proceedings

### **Communications**

- Serving as an Expert Witness at Enforcement Proceedings
- Press and Public Relations
- Communications Skills

#### 7.6.4 Program Design

Policymakers have many issues to consider when designing an inspection program. For example:

- **Selecting Facilities for Inspection.** How are facilities chosen for inspection? What proportion of inspections should be “routine,” and what proportion should be “for

cause”? How can routine inspections be distributed fairly and neutrally across the regulated community?

- **Announced Versus Unannounced Inspections.** When should inspections be announced versus unannounced? If inspections are announced, the facility’s managers can make sure that the information requested and any essential plant personnel will be available when the inspector arrives. Thus, announced inspections can be more efficient and comprehensive. Unannounced inspections, however, are more likely to discover the plant’s true operating conditions. They are particularly useful when there is reason to believe the source is in violation and is misrepresenting its self-reported data or is likely to destroy evidence if the inspection is announced. On the other hand, if inspectors need to collect particularly detailed information, it may be necessary to announce the visit so that the relevant experts are available.
- **Frequency of Inspection.** How often should a particular facility be inspected? Policymakers will need to balance the cost of inspections with the expected compliance benefit, while also considering the results of earlier inspections. Sources that are more likely to fall out of compliance may require more frequent inspections.
- **Who Should Inspect?** Which level of government will provide the most effective inspection force: national, regional, provincial, or local? Would it be more effective for the government to contract with an independent group to perform inspections? Numerous variables need to be considered when making these determinations, including cost, resources, experience, and political considerations.
- **Objectivity of the Inspector.** Care is needed to ensure that inspectors do not become so familiar with and sympathetic to certain facilities and facility managers that their objectivity is compromised. Some enforcement programs periodically rotate inspectors to avoid this possibility.
- **Legal Authority.** What legal authority do inspectors have to enter facilities? What form of identification is used to prove the inspector’s authenticity? What procedures will be taken if the facility refuses to allow the inspection? Must the inspector have consent before entering? Does the inspector need a warrant?
- **Role of the Inspector.** Should the inspector determine whether a violation has occurred or simply gather information? Without a clear role and authority, the inspection may fail to meet the needs of enforcement.

- **Comprehensiveness of the Inspection.** What data should inspectors gather? Should inspections focus on data needed under a particular regulation, permit, or license, or should inspectors try to gather data relevant to several environmental regulations, permits, or licenses? The advantage of focused inspections is that it is easier to train inspectors for these inspections. The disadvantage is that more focused inspections may fail to detect non-compliance in areas not specifically covered by those inspections.
- **Inspection of Related Activities.** To what extent should inspectors gather data on related company activities that may have an effect on environmental quality, such as preparedness for chemical emergencies, pollution prevention activities, and waste minimization programs? Which environmental media, including land, air, and water, should inspectors examine?
- **Data Quality.** How can the quality of data be ensured? Ways to help ensure data quality include initial reporting procedures, processes for review and confirmation of the data, and schedules and procedures for auditing the program's reporting and recordkeeping system. Guidance also should be developed to ensure the quality of the laboratory analysis supporting the inspection.
- **Consistency of Sampling and Analytical Procedures.** Use of consistent methods and procedures for sampling and analysis is important to ensure data quality, fairness of enforcement, and the value of the results for legal proceedings. Both inspectors and analytical laboratories require guidance on appropriate procedures.
- **Documenting the Violation.** How should the information gathered by the inspector be documented? The information's value to the program may depend on factors such as its clarity, completeness, and utility as evidence in a court of law.
- **Closing Conference.** Should the inspection include a closing conference? A closing conference provides an opportunity for the inspector to make company managers aware of any violations and what the consequences of continuing non-compliance would be. In some cases, the inspector may suggest ways to correct the violation. A closing conference helps educate the regulated community. However, information conveyed by the inspector could undermine subsequent legal actions taken against the facility. For example, facility managers could claim the information conveyed by the inspector contributed to non-compliance if the information was in any way misleading or not sufficiently comprehensive. Program lawyers may prefer

that inspectors draw no initial conclusions and convey no information about compliance to the facility.

- **Inspector Training.** How can inspectors be adequately trained to gather accurate information and (if relevant) provide technical assistance? What training is needed to ensure the health and safety of inspectors? Are the inspectors conscientious of ethical conduct and quality assurance?

## **7.7 Self-monitoring, Self-recordkeeping, and Self-reporting**

### 7.7.1 What are self-monitoring, self-recordkeeping, and self-reporting?

Self-monitoring, self-recordkeeping, and self-reporting are three ways in which sources can be required to track their own compliance and record the results for government review. It differs from the auditing and environmental management systems in that the latter are broader, often voluntary, measures that government encourages the regulated community to adopt in order to improve that community's compliance and environmental performance. Self-monitoring, self-recordkeeping, and self-reporting, in contrast, represent specific requirements placed on the regulated community to collect and maintain identifiable information.

In self-monitoring, sources measure an emission, discharge, or performance parameter that provides information on the nature of the pollutant discharges or the operation of control technologies. For example, sources may monitor groundwater quality or may periodically sample and analyze effluent for the presence and concentration of particular pollutants. Sources may also be asked to monitor operating parameters on pollution control equipment (such as line voltage and electrical current used) that indicate how well the equipment itself is operating. Operating parameters are generally inexpensive to monitor and provide reliable data that can sometimes give a more accurate picture of emissions than occasional sampling and analysis of the emissions themselves. This type of monitoring has proved to be a cost-effective way for enforcement programs and sources to assure themselves that controls are operating correctly.

Self-recordkeeping means that sources are responsible for maintaining their own records of certain regulated activities (e.g., shipments of hazardous waste).

Self-reporting requires that sources provide the enforcement program with self-monitoring or self-recordkeeping data periodically or upon request.

### 7.7.2 Why choose self-monitoring, self-recordkeeping, and self-reporting?

Self-monitoring, self-recordkeeping, and self-reporting, when taken together, offer a number of advantages over traditional inspections. They provide much more extensive information on compliance than can be obtained with periodic inspections. They also shift some of the economic burden of monitoring to the regulated community. In addition, they provide a mechanism for educating the community about the compliance requirements. Finally, they increase the level of management attention devoted to compliance and may inspire management to improve production efficiency and prevent pollution.

Self-monitoring requires that reliable and affordable monitoring equipment be available to the regulated community. Self-monitoring relies on the integrity and ability of the source to provide accurate data. Reports will be misleading if the source either deliberately falsifies information or lacks the technical capability to provide accurate data. Therefore, programs using these approaches will need to establish some way to help ensure accuracy, e.g., by requiring self-monitoring only in facilities with the appropriate technical capability or by developing quality control standards for monitoring and recordkeeping.

Self-monitoring, self-recordkeeping, and self-reporting are often required by environmental regulations. Firms have an incentive to under-report, but regulators can counteract this incentive through more stringent enforcement of the disclosure requirement. Enforcement officials can make these disclosure requirements facility-specific requirements via permits. Information from self-monitoring, self-recordkeeping, and self-reporting is used primarily to target inspections. It is also sometimes used as a basis for enforcement actions. When used in enforcement actions, it is usually supplemented by inspections to corroborate the accuracy of the data.

### 7.7.3 Designing effective self-monitoring, self-recordkeeping, and self-reporting

To use self-monitoring, self-recordkeeping, or self-reporting as part of an enforcement program, program officials need to provide guidance to the regulated community on: the standard procedures, methods, and instruments that should be used to obtain the data; how frequently data should be collected; and how the data should be recorded and reported. Some issues to consider in developing these requirements are:

- **Cost.** What will the cost and paperwork burden be to industry and government?  
What will the benefits be? Are the benefits worth the cost?

- **Technology Requirements.** Is technology available for monitoring? How much does it cost? How accurate and reliable is it? How easy is it to learn how to operate the equipment to get accurate results?
- **Data Use.** How exactly will enforcement officials use the data? What information will the data provide about violations or compliance success? What is the minimum amount of data that will be useful?
- **Extent of Requirements.** Should the source be required to report all data or just data that indicate a potential violation? Proponents of the “all data” requirement argue that management pays more attention to routine reporting and that enforcement officials can better control the quality of data. Proponents of exceptional reporting<sup>36</sup> argue that this approach is much less expensive, and that the “all data” approach may discourage sources from voluntarily conducting additional monitoring that they feel may be valuable.
- **Public Disclosure.** Should the self-reported data be made available to the public? Most U.S. environmental laws require that self-reported data be made available to the public. This publicity deters violations and failure to report, especially when the law gives citizens the right to sue sources.
- **Self-certification.** Should senior industry officials be required to certify that the facility is in compliance? Increasingly, U.S. laws are introducing this requirement and making senior officials personally and criminally liable for false reporting. This is an effective way to elicit the attention and cooperation of senior management in achieving compliance. Such requirements are meaningful only if they are backed by clear guidance and procedures for self-certification. Self-certification may also include a requirement to report violations and efforts to correct them.

Different compliance monitoring program objectives require different capabilities in a self-monitoring system. As a result, the structure of a self-monitoring program is affected by the program’s objectives. For example, a self-monitoring program that is used to identify cases warranting enforcement action must identify violations of applicable standards in sufficient detail and be based upon sufficiently reliable data in order to support initiation of an enforcement action. In contrast, a program that uses source self-monitoring primarily to increase awareness in the regulated community with regard to its environmental compliance status (and perhaps, secondarily to deter environmental violations) may be broad in scope but require less active data management by the regulatory agency.

With fixed interval reporting,<sup>37</sup> infrequent reporting may make it difficult for the regulatory agency to make accurate assessments of an entity's environmental performance, as the reports will not provide a cohesive, continuous picture of a facility over time. On the other hand, reporting too frequently may result in unnecessary burdens on both the regulatory agency and regulated entities and may also result in information being collected and submitted that has little added value. The regulatory agency must ensure that the reporting intervals are appropriate to meet its goals. Interval reporting may also be dependent on an entity's compliance history or size. Entities with good compliance records may not be required to report as often as those with poor compliance records. Likewise, smaller entities (both in size and discharge amounts) may have less of a reporting burden.

**BOX 7-8: SELF-MONITORING IN CANADA<sup>38</sup>**

Canada requires self-monitoring for pulp and paper manufacturers and metal mining operations. Frequency of monitoring can range from continuously to monthly. Pulp and paper mills are required to monitor Biochemical Oxygen Demand three times a week, Total Suspended Solids daily, acute lethality weekly (using *Daphnia magna*) and monthly (using rainbow trout), and pH, flow, and electrical conductivity continuously.

If a facility fails the monthly acute lethality test using rainbow trout, the test frequency is increased to weekly. In addition, pulp and paper facilities are required to self-monitor the chemicals 2,3,7,8-TCDD and 2,3,7,8-TCDF during each month in which the chlorine bleach plant was operating. If no measurable concentrations are detected for three months, the frequency is dropped to quarterly. The regulated facility may have a qualified laboratory onsite to collect and analyze the samples, or it may hire outside contractors to collect or analyze the samples.

## **7.8 Citizen Monitoring**

### **7.8.1 Citizen Monitoring Generally**

Citizen monitoring can help government agencies identify violations and is particularly important when resources for government monitoring are scarce or insufficient. Citizens can contribute to enforcement efforts by tracking industrial environmental performance through independently compiled emissions data or compliance reports produced by regulated entities.

In some countries, governmental institutions make use of citizen monitoring that may already be taking place, independent of any authorizing legal provisions. Formal cooperative partnerships are also sometimes established between citizens and the government for monitoring. For example, in the United States, a number of citizen organizations teach citizens to walk streams, identifying locations of pollutant emissions and observing the effects of those

emissions on water quality or indicator species. The Izaak Walton League of America is one such organization that trains citizens to monitor the environment. Their findings are reported to federal and state agencies through a national clearinghouse. State agencies also help to fund the League's training and reporting programs.<sup>39</sup>

Another formal vehicle for public participation in monitoring is the establishment of coordination agreements between the government and citizen organizations. In the Philippines, multi-party monitoring has enabled local community residents, NGOs, and industrial project proponents to join representatives from the Department of Environment and Natural Resources to undertake post-environmental impact analysis compliance monitoring. The Department institutionalized multi-party team monitoring by creating, in each regional office, a Regional Community Advisory and Monitoring Committee whose membership includes NGOs and the private sector. The law requires that committees be involved in all phases of the environmental impact analysis, including compliance monitoring.<sup>40</sup>

An increasingly useful monitoring mechanism for citizen enforcement of industrial environmental standards is the use of pollutant release and transfer registers. These registers enable citizens to monitor industrial environmental performance by providing detailed facility-specific data on types, locations, and amounts of hazardous substances released on-site and transferred off-site. In several countries, including Canada and the United States, certain corporations are required by law to compile and submit this data to the federal government, which then makes the information publicly accessible. Equipped with detailed information on facility-specific emissions, citizens can track compliance, work directly with corporations to encourage compliance, and help governments identify violations.

The specific type of information reported in pollutant release and transfer registers and the range of facilities covered vary from country to country. Key elements that define the scope of such registers include: the types of facilities required to report; the thresholds for staff size and chemical use above which a facility must report; and the types of pollutants covered and how their use is quantified.

### 7.8.2 Citizen Involvement in Inspections

Some countries allow citizens to participate in compliance inspections conducted by government officials. Usually, the citizen must have been involved in the complaint process prior to the inspection. For example, water quality legislation in Argentina allows private parties who have filed a complaint about a facility to participate in any inspection of the facility during the investigation.<sup>41</sup> In some countries, government agencies are allowed to contract with citizen

groups or other associations to enlist their assistance in inspection efforts. (See Box 7-9 for examples).

**BOX 7-9: EXAMPLES OF CITIZEN INVOLVEMENT IN INSPECTIONS<sup>42</sup>**

In some countries, government agencies are allowed to contract with citizen groups or other associations to enlist their assistance in inspection efforts. For example, under Estonia's Nature Protection Act, citizens can be deputized as "public inspectors" to monitor compliance with laws, regulations, and permits concerning hunting, fishing, and forestry.<sup>43</sup> They are permitted to write protocols about violations of nature protection rules, but they cannot take payment.

Some countries allow citizens to demand inspections under limited circumstances. For example, in the Czech Republic, under the Building Act, parties to the land planning decision and investment permitting process have the right to demand the inspection of facilities before and after completion.<sup>44</sup>

**7.8.3 Public Complaint Processes**

Public complaint processes facilitate citizen participation in administrative enforcement efforts in many countries. Typically, these processes establish a mechanism for citizens to submit complaints to the government concerning activities that are causing environmental harm or ecological imbalance. The government is then required to address complaints and respond in a timely manner. Public complaints can be very useful in drawing government attention to enforcement problems that may otherwise go unrecognized or escape proper response.

Some countries have an independent complaint committee or designated staff member (ombudsman) at the national or local level established to handle citizen complaints. These institutions are usually funded by, but otherwise independent of, the government and are competent to deal with complaints on the basis of statutory rules. Oftentimes, the laws creating the ombudsman position regulate what kinds of complaints may be reviewed.

Poland, for example, created a position called the Commissioner for Civil Rights Protection. The Commissioner's role is to receive and manage complaints about infringements of citizens' rights and freedoms determined by the Constitution and other provisions of law. The position is not specific to environmental law, but environmental issues fall under the Commissioner's jurisdiction and historically have been the foci of some of its activities. The Commissioner does not have authority to rule on administrative matters, but can recommend or appeal decisions, suggest legislative initiatives or procedural amendments, and pursue solutions to specific violations to promote compliance with the law.<sup>45</sup>

Citizens may also be able to use informal complaint mechanisms or petitions to draw government attention to enforcement issues. In Mexico, for example, the Federal Ecology Law, and parallel state laws, enables any person to file a complaint with the Federal Environmental Protection Agency regarding acts or omissions causing ecological imbalance or injury to the environment.<sup>46</sup> The Agency then is required to investigate the problem and issue publicly available, non-binding recommendations. These recommendations may have evidentiary value for future litigation. If the Agency finds violations, it may take immediate administrative action.<sup>47</sup> Throughout Mexico, this process is the principal vehicle for public participation in administrative enforcement matters, and it seems to be an important mechanism for focusing government attention on enforcement problems. To receive complaints, two states have established toll-free telephone “hotlines,” and another staff has set up a green mailbox.

## **7.9 Area Monitoring**

Additional information on compliance status can be gained by area monitoring, i.e., monitoring environmental conditions near a facility. Area monitoring includes ambient monitoring, remote sensing, and over flights.

### 7.9.1 Ambient Monitoring

Ambient monitoring includes any monitoring to detect pollutant levels in the ambient air, ground, or surface waters near a facility. The main problem with ambient monitoring is that it can be difficult to demonstrate that the pollutants measured came from a particular facility. Ambient monitoring is most useful when a source is the only significant polluter in the area or when its emissions have a characteristic composition that serves to “fingerprint” them. In these cases, ambient measurements clearly suggest potential violations at a facility and can be used to target inspections. Otherwise, ambient data rarely can be used alone to prove a violation because of the difficulty of proving a connection to the source.

### 7.9.2 Remote Sensing via Satellite and Aircraft

Satellites and aircraft can be used as remote tools to monitor compliance with environmental requirements and help target inspection activities. Satellites can provide detailed information on indicators of non-compliance, such as chemical spills, impervious surface area, forest cover, oil discharges, smoke plumes, illegal development or logging, and mining operations. Commercial satellite imagery is available in sub-meter resolution.

Similarly, aircraft over flights can be used for compliance monitoring and promotion. Over flights can be used to make detailed, time-sensitive observations of potential areas of

illegal activity. For example, aircraft-mounted cameras can monitor the location and condition of dikes and fences at a regulated facility, observe loading and unloading of hazardous materials, and even record physical evidence such as license plate numbers. Over flights may also be used to detect facilities subject to environmental requirements, detect facilities that may not have registered for a program or filed required notifications, and determine the relative locations of wastewater discharges, air emissions, hazardous waste management facilities, water supply intakes, populated areas, etc. Box 7-10 offers an example of over flights in the Netherlands.

**BOX 7-10: OVER FLIGHTS IN THE NETHERLANDS**

Over flights have been used very successfully in the Netherlands. Airplanes and helicopters are used in a pollution context to detect illegal discharges and dumps and in a biodiversity context to detect illegal timber removal or illegal land clearing. The responsible parties are notified about the detected violations and requested to act where necessary. The program became more successful when helicopters began to work simultaneously with ground vehicles. Sighted violations were reported to ground personnel who immediately proceeded to the scene and dealt with the situation. Periodic aerial photographs of wreck yards and dumpsites provide a good record of these operations and chronicle the change enacted by these enforcement activities. Where appropriate, these photographs can be used in later investigations.