

**Multimedia Inspection Protocols:
International Examples**

April 1996

Submitted to:

U.S. Environmental Protection Agency
Office of Federal Activities
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EPA Contract 68-W2-0026
Work Assignments 39-II and 39-III
SAIC Project 01-0834-07-5144-200

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ACKNOWLEDGEMENTS

This document, *Multimedia Inspection Protocols*, is one of six draft Environmental Compliance and Enforcement Technical Capacity Building Technical Support Documents prepared to support the Fourth International Conference on Environmental Compliance and Enforcement to be held in Chiang Mai, Thailand, April 22-26, 1996 and ongoing international training workshops. These documents are prepared for use as resource documents to be used by government officials and others who have responsibility for developing and/or enhancing environmental compliance and enforcement programs. The six documents include:

- C Organization of Environmental Enforcement Programs,
- C Financing Environmental Enforcement Programs,
- C International Comparison of Source Self-Monitoring, Reporting, and Recordkeeping Requirements,
- C Multimedia Inspection Protocols: International Examples,
- C Communications Strategies for Enforcement Programs, and
- C Enforcement Issues Related to Transboundary Shipments of Hazardous Waste, CFCs, and Pesticides.

Consistent with the goals of the Fourth Conference, its international sponsors, and the Executive Planning Committee to build capacity internationally for environmental compliance and enforcement, this document addresses key aspects of how and why to incorporate multimedia inspections as a component of a compliance monitoring program.

Environmental control programs are often directed at a particular environmental medium, that is water, air or land. Consequently, it is not surprising that compliance monitoring and enforcement programs

have generally directed that compliance inspections be conducted on a media-specific (that is, single media) basis. In a multimedia or integrated inspection¹, the regulatory authority evaluates a facility's overall compliance with environmental control programs, rather than assessing facility compliance on a media-specific basis. In addition, multimedia inspections may address environmental performance issues, such as the evaluation of pollution prevention opportunities, that offer environmental benefits in excess of that required by statute or regulation.

This document presents key factors that program managers should consider prior to adopting multimedia inspections into an overall compliance monitoring program. As described within, we have found that there have been a variety of approaches for conducting multimedia inspections. Selection of an appropriate approach understandably depends on the regulatory program's purpose for conducting a multimedia inspection, the size and complexity of targeted facilities, the expertise and training of the inspectors, the time allotted for conducting the inspection, and other factors. Government officials can use the information provided in this document as a reference for designing a multimedia inspection program appropriate within an overall compliance monitoring framework.

This document was developed with the support of Science Applications International Corporation under United States Environmental Protection Agency Contract 68-W2-0026, Work Assignments 39-II and 39-III. Technical direction was provided by Ms. Cheryl Wasserman of U.S. Environmental Protection Agency's Office of Enforcement and Compliance Assurance, in cooperation with other conference sponsors (for example, The Netherlands Ministry of Housing, Spatial Planning and The Environment) and Executive Planning Committee members, each of whom, along with their governments or organizations, must be recognized for their support in reviewing and commenting on the draft outline of the document.

This document could not have been developed without the generous assistance of:

- C Javier Cabrera Bravo, Office of Attorney General for Environmental Protection, Mexico,
- C Christopher Currie, Environment Canada,
- C Jo Gerardu and Robert Glaser, The Netherlands Ministry of Housing, Spatial Planning and
The Environment,
- C Alun James, United Kingdom, Her Majesty's Inspectorate of Pollution,
- C Jens Erik Pettersen, Norway State Pollution Control Authority,
- C Dr. Manfred Putz, Germany,
- C Robert Reiniger, Hungary National Authority for the Environment,
- C Dr. B. Sengupta, India Central Pollution Control Board, and
- C Rolf Svedberg and Kitty Victor, Swedish Environmental Protection Agency
- C Cheryl Wasserman, United States Environmental Protection Agency.

These individuals expended significant effort to gather information, complete tables, respond to questions, provide relevant reference materials, and review draft documents. Because the information they provided has been essential to the completion of this report, these individuals deserve special thanks for the time, effort and patience they committed to this project.

We seek your comments as to whether these documents serve their intended purpose and how they might be improved. We will finalize the documents following a four month international review process.

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1 INTRODUCTION

This document addresses the role that multimedia inspections can play in advancing both environmental compliance and performance. In doing so, it identifies a variety of approaches available for conducting multimedia inspections. Moreover, it presents the factors that drive which multimedia inspection approach(es) may prove most valuable within the environmental program's overall objectives.

Compliance monitoring is a key element of any environmental enforcement program, serving to assure compliance, identify and document non-compliance, and provide the basis for enforcement actions and program evaluation. It consists of several types of activities, including: conducting inspections; requiring regulated entities to self-monitor; conducting ambient monitoring of particular areas; and reviewing citizen complaints.

Traditionally, most environmental control programs have targeted a particular environmental media, for example, air, land, and water. However, in the last few years, more and more attention has been paid to the overall relationship between economic production and the environment, and the need to explicitly consider all available opportunities to optimize production and environmental performance in an integrated fashion. They stress environmental performance from a multimedia perspective.

Environmental program managers are working to integrate concepts such as cleaner production, life cycle assessment, pollution prevention, industrial ecology, and sustainable development principles into their pollution control programs, seeking new and better ways for regulated facilities to achieve compliance. Their goal is to leverage resources to boost compliance rates. Many environmental programs are investing more effort into compliance assistance programs, working cooperatively with regulated entities to meet compliance requirements, and in so doing seek to help them integrate compliance with specific environmental requirements with these broader concepts. These efforts include providing one-on-one technical assistance or more generic assistance, such as developing of basic analytic tools, and providing transfer of technical data. Additionally, countries are working to provide more flexibility to the regulated community in meeting environmental standards.

Compliance monitoring and enforcement program managers are also evaluating how multimedia concepts can be integrated into their inspection programs to improve environmental compliance and performance. As noted earlier, compliance monitoring approaches are an element of environmental enforcement programs, which, in many cases, have been developed along single media lines. Thus, it is no surprise that compliance inspections have generally been conducted on a media-by-media basis.

By definition, inspections always focus on evaluating a facility's compliance status. The main difference in multi-media inspections is that they involve evaluating a facility's "overall environmental compliance status," rather than establishing the facility's compliance status on a media-specific basis, as is done in single media inspections. Although the majority of compliance monitoring programs tend to involve single media inspections, multimedia inspections have been conducted either to augment or serve as the fundamental approach to inspections by environmental compliance and enforcement programs. As a result, regulatory agencies have, over time, adopted a variety of approaches for conducting multimedia inspections to meet their particular interest and circumstances.

This document discusses the relative advantages and disadvantages of multimedia inspections under different circumstances. It also identifies different approaches for implementing multimedia inspection programs, and provides examples illustrating programmatic differences.

The following countries shared their experience in conducting multimedia inspection programs:

- C Hungary,
- C India,
- C Mexico,
- C The Netherlands,
- C Norway,
- C Sweden,
- C United Kingdom, and
- C United States.

It is important to note that this document focuses only on one part of an integrated program -- multimedia inspections. Such inspections may be the only multimedia component of a country=s

environmental programs (that is, the program may be single-media based), or may play a well-defined role within a country's overall multimedia environmental control framework. There may not be a single approach to conducting multimedia inspections that is best in all circumstances.

2 WHY CONDUCT MULTIMEDIA INSPECTIONS

Should pollution control programs be designed to address facility-wide releases in a comprehensive, multimedia fashion? The underlying premise of this document is that multimedia concepts present a reasoned approach toward achieving environmental protection. Assuming pollution control managers agree that their programs should involve multimedia components, can inspection programs be designed to advance more integrated results? This question should be reviewed in a general and specific sense. In the general sense, the question is whether or not multimedia inspections can yield better results than single media inspections. In the specific sense, the question is whether or not a multimedia inspection of a particular facility will yield improved results. In designing an effective compliance monitoring program, the environmental program manager needs to consider both questions.

In addressing these questions, environmental program managers should determine whether:

- 1) Multimedia inspections can enhance the regulatory agency's enforcement presence,
- 2) Multimedia inspections can yield better environmental results (for example, reductions in cross-media transfers, identification of pollution prevention opportunities) than a single media inspection,
- 3) Multimedia inspections can provide increased resource efficiencies for the regulatory agency, and
- 4) Multimedia inspections can result in increasing the plant manager's attention to environmental protection issues.

Regulatory agencies should consider adopting the use of multimedia inspections where the perceived benefits of conducting such inspections exceed those benefits that would otherwise be realized from single media inspections. The following sections discuss the benefits generally associated with multimedia inspections and suggest factors to consider in determining whether the general benefits may occur in a site specific situation.

Exhibit 2-1 summarizes the benefits generally associated with single and multimedia inspections. As presented in this exhibit, both types of inspections can yield benefits. Determining the most appropriate type of inspection for a compliance monitoring program is dependent on overall programmatic goals as well as site-specific circumstances. The

Exhibit 2-1. Benefits Generally Associated with Single Media and Multimedia Inspections

Considerations	Single Media Inspections	Multimedia Inspections
	Compliance/	

Enforcement Effectiveness May achieve greater enforcement results than multimedia inspections due to specialization, experience, and training of inspectors.

Enforcement presence may increase due to multiple single-media inspections. May achieve greater deterrence than single media inspections due to broad scope, time, and potentially detailed level of inquiry.

Enforcement presence results from achieving greater management attention.

Effective in enforcing against facilities with many small violations in several programs.
Resource Needs Requires trained inspectors for each media program. Limited availability of trained inspectors impacts ability to monitor compliance.

Retention of trained inspectors important.

Potentially more efficient due to reduced number of trips and consolidated transportation of inspectors; may need fewer inspections if they can be cross-trained.

Retention of cross-trained inspectors even more important than single media inspectors due to greater training investment.

Type of Facilities Suitable for most facilities. May not effectively address multimedia releases.
Team inspections may be overwhelming for smaller facilities. Consolidated inspections with one or two cross-trained inspectors may be more appropriate for small and mid-sized facilities.

Time Required Single media inspections generally efficient, but cumulative burden may be significant.
Screening inspections can be very efficient for detecting potential violations and referring for follow-up single media violations.

Comprehensive multimedia inspections can take longer than single media inspections.
Scope Requires multiple inspections to achieve comprehensive coverage. Comprehensive coverage of facility.

Greater opportunity to address underlying environmental issues.

Greater opportunity to review entire process for pollution prevention opportunities.

remainder of this chapter provides a brief overview of the types of benefits that can be derived from multimedia inspections. It also suggests factors which may detract from achieving these benefits. Chapter 3 then provides descriptions of how different countries and programs have adopted multimedia inspection approaches to maximize benefits in their compliance monitoring program.

2.1 ENHANCED COMPLIANCE/ENFORCEMENT PRESENCE

In theory, multimedia inspections have the potential to be more effective at establishing an compliance/enforcement presence than single media inspections because they:

- C Enhance the likelihood of identifying violations across the spectrum of environmental requirements.
- C Command the increased attention of management.

Where an inspector or team of inspectors is conducting a multimedia inspection, few, if any, components of a facility's environmental compliance program are beyond the scope of the inspection. This broad scope can subject regulated facilities to greater compliance scrutiny than is created under traditional inspections.

In addition, because multimedia inspections may be conducted by two or more inspectors and, depending on the level of inspection, may involve a longer period of time than required for single media inspections, multimedia inspections offer an increased potential for discovering violations. On the other hand, because multimedia inspections require greater coordination with facility staff, it may be necessary to pre-notify the facility of an impending multimedia inspection, whereas a single media inspection could proceed unannounced. As a result, where a multimedia inspection is planned, the facility could have sufficient time to correct at least some existing problems. Consequently, program managers need to assess whether the element of surprise is necessary to assure the success of an inspection.

Multimedia inspections can involve a large number of inspectors and require more time to complete, contributing to an increased enforcement presence. These factors tend to promote the increased attention of firm management to environmental compliance issues. The significant presence achieved through team multimedia inspections also increases the awareness of the regulated community of its compliance obligations and the potential of being subject to rigorous compliance monitoring.

It is important to recognize, however, that the advantages discussed above depend greatly on the nature of the multimedia inspection, its scope, and the training of the inspectors. Program credibility may be lost if, in the process of conducting a multimedia inspection, inspectors fail to detect important violations either because they lack the time, resources, or training to cover the intended scope or follow proper inspection procedures.

2.2 IMPROVED ENVIRONMENTAL RESULTS

Multimedia inspections can often result in improved environmental performance. For example, where a single-media inspection program typically focuses on the reduction or management of waste in a particular environmental medium without regard to the consequences for other media (for example, air pollution regulations that require the use of control devices, such as scrubbers, which produce contaminated wastewater discharges), a multimedia inspection program may seek to reduce the cross media transfer through the identification of a pollution prevention approach that results in reduced releases to both the air and water media.

There are two basic ways to conduct an inspection: (1) beginning from the point of a specific release or discharge and working back through the process to the entry of raw materials or (2) beginning at the entry of raw materials and proceeding through the process to the point of a specific release or discharge point. In this document, these inspections are called “mass balance” inspections.

Before going into more detail regarding mass balance approach inspections, it is important to note that there are different levels within each single media and multimedia inspection currently used. Inspections that involve very limited information collection (for example, screening inspections) are considered the lowest level, while

the use of sophisticated sampling and testing equipment is often considered the highest level. Prior to conducting an inspection, the reason for doing so (for example, compliance or enforcement) will often dictate which level or approach (single as compared to multimedia) is to be used.

Many inspections are done at a middle level to determine compliance with permissible emission or release regulations, and with storage, handling and/or disposal regulations. During inspections at this level, the only process-type inquiries involve the determination of normal production conditions. If there are compliance issues, the level of inspection is often increased to a process inspection done concurrently with the emissions or release point and storage, handling and disposal practices inspection. The next level may involve the internal inspection of control devices, process reviews, sample collection and on-site analysis. The highest level would involve all these activities with additional personnel to perform more sophisticated sampling and analysis.

In cases where a simple compliance determination is required or when an inspector is very familiar with the inspected facility or process, the inspection is often performed by starting at the release or discharge point and working back through the process. In most cases, the inspection ends at the control device or process activity being regulated. As mentioned above, the only process information collected are those that determine conditions during the time of the inspection.

Multimedia inspectors using this “mass balance” approach are in a far better position to identify:

- C Cross-media pollution,
- C Process/material-related problems,
- C Pollution prevention opportunities, and
- C General environmental conditions.

This process line or mass balance approach toward conducting inspections is not only capable of tracking environmental compliance across different media, but also capable of identifying opportunities for improved environmental results by addressing corrective measures to limit cross-media transfers, identifying process- or material-related problems, enabling compliance assistance, and examining pollution prevention opportunities.

The results of a process-line or mass balance inspection, may spur facility managers to become more aware of the consequences of certain production practices and, as a result, adopt production process modifications which reduce environmental control costs while, at the same time, yield an equally good or improved product.

Multimedia inspections may also assess general environmental conditions (for example, visible leaks, spills, odors, or physical condition of processes), thereby providing the most comprehensive picture of overall environmental conditions at a facility and offering the greatest opportunity for identifying areas of improvement.

Clearly, conducting a detailed, process-based inspection presents several challenges.

Such a program involves using highly-trained personnel, knowledgeable of specific industrial categories, (for example, iron and steel). One might consider conducting these inspections with a single highly trained inspector or an inspection team. Additionally, such inspections take more time than would a single media inspection. Other factors to consider in this type of approach are the size and complexity. For example, these types of inspections may work well for small to mid-sized facilities with more limited regulatory requirements and where it may be easier to train the inspector in that specific process(es) (such as printing processes and vehicle repair activities).

2.3 POTENTIAL FOR INCREASED EFFICIENCY

Multimedia inspections also can promote the efficient use of compliance monitoring and enforcement resources. Travel expenses may often represent a significant component of total inspection cost. By consolidating inspections, these travel costs can be reduced, particularly where a single inspector can screen multimedia compliance at a facility, or fully assess compliance with requirements imposed under two or more environmental programs. At larger facilities, where an inspection team may be employed, resource savings can be realized by minimizing duplicative aspects of the inspection process. In addition, because of the increased scope of multimedia inspections as compared to single media inspections, as well as their increased visibility within the regulated community, such inspections may not need to be conducted as frequently as single media inspections. Similarly, where multimedia inspections directly address the problems that cause environmental violations, fewer inspections may actually be needed.

However, multimedia inspections may impose additional resource demands on governments that counterbalance gains in efficiency. Such demands include the time and cost of cross-training inspectors as to the requirements of multiple programs, and/or the need to assign several inspectors (that is, a team) to a single multimedia inspection.

2.4 ENHANCED COMMUNICATIONS WITH REGULATED COMMUNITY

Multimedia inspections offer the potential to enhance communications between regulated facilities with multimedia operations and the regulatory agency responsible for environmental oversight of such facilities. Under programs that use single media inspections, such inspections are typically conducted by a different inspector for each environmental program area. One result of this approach is that where a facility has a problem or question, it must be able to identify and contact the particular inspector responsible for the relevant program area to address the problem.

In contrast, multimedia inspections are generally directed by a team leader or a single specialized inspector or “process expert,” who serves as an easily identifiable point of contact for facilities with problems or questions related to environmental compliance. This makes it much simpler for those within the regulated community to initiate communication with the regulatory agency. The facility also can be confident that the multimedia inspection leader or specialized inspector will have a good understanding of the overall facility or operation, based on his or her multimedia training and experience. These factors encourage communication, which builds

understanding and promotes higher rates of compliance.

Additionally, as a result of the time associated with a multimedia inspection, and in some cases the size of the inspection team, the inspection raises the visibility of the regulatory agency across the industrial community. When a multimedia inspection of a facility takes place over several days, or weeks, the word tends to spread across the regulated community. This enhanced visibility can serve as an effective deterrent to noncompliance.

3 APPROACHES TO MULTIMEDIA INSPECTIONS

As discussed in Chapter 2, multimedia compliance inspections can offer significant advantages in terms of:

- C Enhancing enforcement,
- C Improving environmental performance,
- C Reducing resource requirements, and
- C Improving communications with the regulated community.

However, as also discussed in Chapter 2, in some cases multimedia inspections may prove less beneficial than single media inspections. This does not mean, however, that environmental program managers should not consider the multimedia inspection concept. Rather, they may choose to use a multimedia inspection approach that yields the greatest benefits in their particular compliance monitoring programs. In some cases, they may choose to blend the best aspects of a multimedia and single media programs, using them as complementary elements within an overall inspection framework. There is not a single approach or procedure for conducting multimedia inspections. As described in this Chapter, there are a variety of multimedia inspection approaches, each designed to meet particular circumstances.

The remainder of this Chapter discusses the specific assessment or protocols performed as part of multimedia inspections and how these may differ from single media inspections.

Section 3.1 briefly summarizes three general types of assessments that are being used in multimedia inspections. The primary assessment type used by these programs focuses on compliance, a second assessment type reviews overall facility environmental conditions, and the third involves the provision of technical and compliance assistance to the regulated facility. All of these assessment types share an interest in multimedia effects and can be conducted separately or jointly.

Section 3.2 then identifies four separate approaches used to advance these assessment types. In Section 3.2, these approaches differ in scope and associated resource requirements. They do not represent the sum total of inspection approaches available. Indeed, compliance program managers can mix and match these inspection approaches as well as how and when they are conducted. For example, these approaches may be used in a sequential fashion, or one could be found to be applicable

to smaller facilities, another to specific types of industrial categories.

In Section 3.3, a discussion of the programmatic, resource and site-specific factors that may influence the selection of multimedia inspection programs is provided. Finally, Section 3.4, presents some examples of how multimedia inspection programs have been incorporated into overall compliance monitoring programs.

3.1 TYPES OF ASSESSMENTS CONDUCTED DURING MULTIMEDIA INSPECTIONS

In Chapter 2, the potential benefits associated with multimedia inspections were summarized. In this section, the three broad purposes in which pollution control agencies are making use of multimedia inspections are defined. These purposes are to evaluate:

- C Compliance,
- C Environmental conditions, and
- C Need for compliance/technical assistance.

All of the countries that provided information for this document always addressed some level of compliance assessment in their multimedia inspections. In many cases, environmental conditions and/or the need for compliance/technical assistance were also assessed as part of such inspections. **Exhibit 3-1** presents the types of assessments performed by various countries in their multimedia programs. Each type of assessment is described briefly below.

3.1.1 Compliance Assessment

Compliance assessment can be defined as determining facility compliance with applicable statutory, regulatory, or permit requirements. This type of assessment can involve a range of activities, such as determining whether a release meets the applicable limits, whether the facility is keeping the appropriate records and reporting to the regulatory agency at the appropriate intervals, or simply determining whether a particular regulation applies to a facility. Compliance assessments may also serve to identify facilities requiring more in-depth follow-up inspections to completely assess compliance, and/or the need to provide other types of assessments, such as compliance assistance audits.

Exhibit 3-1. Types of Assessments Conducted during Multimedia Inspections

Country	Compliance Assessment	Environmental Assessment	Compliance/ Technical Assistance
			Determine compliance Identify entities requiring follow-up inspections
Germany	U U	U	U
Hungary	U		U

India	U	U	U		U			
Mexico	U							
The Netherlands	U		U	U			U	
Norway	U	U						
Sweden	U	U	U					
United Kingdom (Integrated Pollution Control Program)					U	U	U ²	U
United States	U	U	U		U			

The types of questions asked during compliance assessment are based on the specific requirements against which the facility is being assessed. Basic questions may include:

1. Does the facility discharge process wastewater into a receiving water?
2. Does the facility have a permit?
3. Is the facility operating in compliance with the terms of its permit?

These types of questions are identical to the type of questions asked in a single media inspection. The main difference in all inspections may be the level of detail of compliance-related questions. For example, in a multimedia screening inspection, an inspector may ask questions such as 1., 2., and 3. above. In a higher level single media inspection (as discussed in Section 2.1.2) in addition to questions 1., 2., and 3. above, the inspector would probably ask more detailed questions such as the following:

1. What sampling and analysis methods are used?
2. Are the records being kept for the required period?
3. Do the self-monitoring reports contain the required information?

The types of questions asked are related to the level of inspection being conducted as discussed in Section 2.1.2. This applies to both multimedia and single media inspections.

3.1.2 Environmental Assessment

An environmental assessment evaluates general environmental conditions at a facility to determine whether they pose a potential or actual risk to the environment. This type of assessment involves evaluating the general characteristics of facility releases as well as the environmental conditions surrounding the facility but does not address specific compliance-related issues. Environmental assessments can be based on visual observations or analytical tests. Such assessments may address:

1. Is the soil outside the facility building show signs of a spill?
2. Does the stream to which the wastewater is being discharged show signs of environmental damage (for example, fish kills, unusual odor)?

3. Are air emissions unusually dense or do they contain extreme odors?

3.1.3 Compliance Assistance/Technical Assistance

Compliance/technical assistance involves evaluating the facility's operations and activities to identify opportunities where the facility can potentially improve its compliance and environmental performance. As part of this evaluation, the inspector discusses these opportunities with the facility and provides guidance as to where the facility can find additional information on these opportunities. For example, in the United States, multimedia inspections may include a pollution prevention opportunity assessment. Similar compliance assistance measures are conducted in India and the United Kingdom. These assessments consist of asking questions and making observations during the inspection that solicit information about source reduction measures and recycling practices that the facility has or could possibly implement. The focus is on issues such as:

- C Process changes that would result in less material used or waste generated,
- C Material substitutions that replace toxic materials with less toxic materials, volatiles with less volatile substances to reduce fumes, gases, or other air emissions, and use of materials that can be reused or recycled,
- C In-process reuse,
- C Recycling,
- C Spill prevention, and
- C Housekeeping and clean-up practices that generate less waste.

Such assessments are similar to compliance assistance measures conducted in India and the United Kingdom.

Typical questions that may be asked include:

1. Is the shop clean and orderly to prevent accidents and spills?
2. Does the facility use spigots and pumps when dispensing raw materials?
3. Does the facility use funnels for transferring wastes to storage containers?
4. Has the facility considered the use of less hazardous solvents (for example, aqueous or semi-aqueous solvents)?
5. Does the facility reuse, recycle, or return to the manufacturer waste solvent?

3.2 **APPROACHES TO CONDUCTING MULTIMEDIA INSPECTIONS**

This section identifies four basic multimedia inspection types. It also describes the purpose of each inspection as well as how it relates to the programmatic, resource,

and site-specific factors described above. These inspection types include:

! **Multimedia Screening**—One or more inspectors conducting detailed compliance assessments with respect to media-specific requirements while simultaneously screening for, and reporting on indicators of possible noncompliance in other program areas. Such screening inspections may serve as precursors to more detailed inspections, as necessary.

! **Team Inspections**—A team of inspectors is deployed at the facility to conduct a comprehensive evaluation of the facility’s overall compliance. Each inspector investigates his/her own area of media-specific program expertise.

! **Consolidated Inspections**—Use of one or more inspectors, where each inspector may investigate one or more media programs during a single inspection. Inspectors that conduct consolidated inspections are often specialized or “process expert” inspectors.

! **Process and Prevention Inspection**—This inspection involves examining all aspects of industrial processes, including compliance, pollution prevention opportunities, compliance assistance opportunities, and other issues related to environmental performance and improved efficiency.

The first three inspection types share a common purpose, that of conducting a compliance assessment. While they share the same purpose, they accomplish that purpose differently, considering resource and site-specific circumstances. The fourth type, termed a process and prevention inspection, offers a “beyond compliance” perspective as well as a compliance evaluation. While any of the inspections can be altered to include a process and prevention inspection, a multimedia evaluation can best be conducted within the context of a team or consolidated inspection.

Exhibit 3-2 provides a brief review of the objectives, advantages, and disadvantage of these four inspection approaches. It also provides a brief description of the facilities to which inspection type might be targeted. A more complete description of each approach appears in the following paragraphs.

3.2.1 Multimedia Screening

Multimedia screening inspections are conducted as a brief addendum to single media inspections. A single media inspector conducting a multimedia screening inspection generally uses a simplified checklist as a guide for recording observations and information pertaining to possible multimedia violations that may require follow-up action, such as a more comprehensive inspection.

Screening inspections by nature do not constitute a complete inspection for the non-targeted program areas, and are designed to require a minimal expenditure of time. Using the checklist and visual observation of environmental conditions, the inspector can identify obvious compliance and risk problems beyond those directly related to the specific media program sponsoring the inspection. Often, glaring problems can be identified by direct observation of environmental conditions at the site. For

example, an inspector that visits a facility to inspect compliance with air regulations would also examine the site for obvious violations of water or waste regulations (for example, spills, improper effluent discharges, leaking or unsafe storage).

A screening multimedia inspection does not require extensive staff training to be accomplished successfully. Screening inspections require the least amount of time among multimedia inspections to conduct and, most importantly, have the ability to identify major environmental problems or issues (for example, environmental conditions that endanger human health or the environment). At the same time, while such inspections cannot accomplish a comprehensive evaluation of the site, they offer an effective means of targeting additional, more comprehensive inspections.

3.2.2 Team Inspections

Team inspections involve the inspection of a facility by two or more inspectors each of whom is trained in a single program area. Typically, a team inspection is directed by a leader, who coordinates the inspection team activities. During a team inspection, inspectors focus on their areas of program expertise, however, the inspection may proceed such that some or all inspectors examine components of the facility (for example, a storage tank, a major process, a treatment unit) simultaneously. This allows for each inspector to become aware of problems in other program areas and to provide input, as needed, to assess such problems.

The primary advantage of a team approach to conducting multimedia inspections is the fact that such inspections do not require that inspectors undergo additional, specialized training. This can save resources, however, such savings may be negated by having to mobilize numerous inspectors, which is not always possible. Team inspectors also raise the visibility of the inspection to the facility's management. By raising the visibility of the inspection, the regulatory agency can raise corporate interest in investing in environmental control. Additionally, conducting such an inspection can quickly spread program visibility throughout the regulated community, particularly in the immediate geographic area and within the facility's industrial section, and result in deterrence of noncompliance.

From an enforcement perspective, conducting a team inspection enables enforcement officials to consolidate inspection reports and take a single, unified action against the facility. Preparing a single, unified action can build the enforcement officials' leverage in taking an action and, perhaps, enable enforcement officials to negotiate innovative settlements.

3.2.3 Consolidated Inspections

Consolidated inspections require that inspectors be able to conduct full or partial inspections in two or more program areas. Such inspections may employ one or two inspectors, each of whom is cross-trained in two or more program areas. Deploying

cross-trained inspectors is most effective where:

- C A facility presents numerous programmatic issues (that is, hazardous waste, air pollution, water pollution) of various types (that is, environmental compliance, environmental impact),
- C Inspectors can be trained to handle the requirements of particular industrial sectors or broad areas of economic activity, or
- C Multiple environmental programs have interrelated requirements that are addressed by the training.

The advantage of consolidated multimedia inspections is that they can address cross-program issues and those issues that underlay the violations normally detected by single media or certain multimedia inspections. However, consolidated inspections demand cross-trained inspectors, and can be difficult to execute, as well as be time-consuming to conduct. On the other hand, by deploying experienced, cross-trained inspectors, enforcement programs may find that the upfront investments in conducting the inspection reap benefits in the extent and quality of evidence gathered, improved evidence in work to speed the enforcement process, abrogating the need to conduct additional follow-up inspections, and increasing leverage with one noncomplying facility.

3.2.4 Process and Prevention Inspections

Process and prevention inspections focus on identifying key industrial processes and their associated wastestreams and determining whether these wastestreams are properly managed. These inspections differ from traditional mid-level control device inspections in that they focus on developing a greater understanding of the entire process, from raw material inputs, through the process operation, to all outputs, including products, intermediates, and all wastes (solid, liquid, and air emissions). Process and prevention inspections follow many of the steps used during traditional inspections, however, the focus and level of detail is generally greater during a process and prevention inspection consistent with the need to develop an in-depth understanding of key processes and wastes. For example, during process and prevention inspections, inspectors often develop a facility process model and add to the model as the inspection proceeds.

The primary advantage of process and prevention inspections is that through developing an in-depth understanding of targeted processes, inspectors can identify the key factors that contribute to violations, as well as promote solutions that are most acceptable from both an industry and regulatory perspective. The potential disadvantage of this approach is that it can require additional time, resources, and expertise to develop the knowledge of key processes necessary to make it work.

One issue that may arise in conducting process and prevention inspections is that inspectors may find it difficult to distinguish between their enforcement role and their

compliance assistance role. By design, this type of inspection presents the inspector with a greater opportunity to educate facilities about compliance and better environmental performance. However, an inspector must continue to critically evaluate all environmental violations. Moreover, it must be clear to the inspector and the facility that the compliance assistance function is secondary to that of enforcement, that compliance assistance information is purely advisory in nature, and that each facility is fully responsible for its own compliance decisions (that is, such information is meant to facilitate better decision-making by the facility, and is not binding on the regulatory agency nor does it render an agency liable for results produced by reliance on such information).

3.3 FACTORS TO CONSIDER IN SELECTING MULTIMEDIA INSPECTION APPROACHES

A variety of multimedia inspection approaches have been designed to further the advantages associated with the principles of multimedia environmental control. Each of these inspection approaches has been adapted to meet one or more of the following factors:

- (1) programmatic factors,
- (2) resource factors, and
- (3) site-specific factors.

These factors can drive the selection of an appropriate inspection approach. However, it should be noted, that a single compliance monitoring program can include any combination of multimedia inspection approaches. That is, using one approach does not preclude the use of another, and more than likely each approach can be used wisely within the context of an overall program.

3.3.1 Programmatic Factors

As noted in Chapter 1, compliance monitoring programs are but one element of the overall environmental control program. In some cases, the inspection program may not be the best mechanism for serving overall programmatic goals. Environmental program managers need to seriously consider that the inspection program may not, for example, yield cooperation in advancing pollution prevention goals within the regulated community.

Some environmental program managers have found they can advance pollution prevention objectives within the private sector by providing hands-on technical assistance through the inspection process, whereas others have found that advancing pollution prevention goals within the context of a compliance inspection can be counter-productive.

Facility owners can be suspicious, and therefore non-receptive, of receiving pollution prevention technical assistance within the context of a compliance inspection. Many

facility owners are strongly guarded about discussing production techniques with regulatory program officials, particularly those with enforcement responsibilities. Thus, some compliance program managers have found that comprehensive inspections involving facility-wide, process-oriented reviews do not necessarily offer the pollution prevention opportunities initially envisioned. Instead, these program managers find that pollution prevention objectives can be furthered through separate compliance assistance programs, providing on-site technical assistance on demand, rather than within the context of the regularly-scheduled compliance evaluation.

On the other hand, enforcement officials have found that such process-oriented inspections are extremely valuable in identifying a comprehensive list of violations across media statutes. A comprehensive list of violations provides enforcement officials with considerably more leverage in an enforcement proceeding than would a smaller list of media-specific violations. Moreover, since a long listing of violations is more than likely indicative of poor facility management, developing a multimedia enforcement action, based on a comprehensive evaluation of facility-wide practices, is more likely to spur the facility to notice and address the cause, for example, poor management, rather than the symptom.

The question for environmental program managers is whether the cost of conducting a comprehensive, process-oriented inspection merits the benefits derived.

3.3.2 Resource Commitments

Many environmental program managers find that the full range of regulatory programs are simply too complex for a single inspector to master. Additionally, compliance monitoring programs often have difficulty in maintaining inspectors over sufficient time to enable them to acquire a mastery of multiple programs. In addition, when senior inspectors that have acquired such a mastery leave the employment of the regulatory agency, they are more difficult to replace. Consequently, from a resource perspective, investing in training the entire inspection staff in multimedia skills may simply be too resource intensive.

On the other hand, training single media inspectors is more easily accomplished and, when a single media inspector leaves the inspection corps, they are more easily replaced. Consequently, the inspection program invests and loses less in human capital. If the compliance monitoring program experiences high turnover, the environmental program manager may not choose to invest in highly-trained inspectors. In this case, the environmental program manager may choose to establish a small cadre of highly-trained inspectors, perhaps for addressing specified industrial sectors. Other inspectors may receive more limited training in program areas other than their area of media specialization.

3.3.3 Site-Specific Circumstances

Some programs have used senior inspectors, with training in all programs, to conduct multimedia inspections. Others have chosen to use inspection teams, where each inspector concentrates on his/her specialized area.

In smaller facilities, the team approach has been found to be unworkable. Sending a team through a small electroplater shop is too disruptive to facility operations, and can only work to create unnecessary tensions between the regulatory agency and facility owners. On the other hand, even if a program has developed highly skilled multimedia inspectors, expert in petroleum refinery operations for example, the time required to conduct a comprehensive inspection with a single inspector could involve days or weeks.

Consequently, selecting an inspection approach is often a site-specific decision, depending on circumstances such as the size and complexity of the facility, its past compliance history, and the number of environmental media affected.

3.3.4 Use of Multimedia Inspections

The previous section defined factors that may result in selecting one or more inspection approaches. As noted in previous sections, countries elect to conduct multimedia inspections for a variety of reasons, including the types of environmental programs they are trying to enforce, the objectives of the compliance monitoring (that is, inspection) program, the resources (for example, for staff, training) and known facility characteristics. To determine when and how to use multimedia inspections, countries typically develop a strategy for targeting such inspections.

A country may choose to implement multimedia inspections for:

- C All inspections,
- C Facilities or industries that pose the greatest risk, and
- C Where such inspections achieve the greatest deterrence.

This choice generally depends on the type of multimedia inspection being conducted, the objective to be achieved, and the design of the inspection program. Common factors used for targeting multimedia inspections include the following:

C ***Industrial sector or processes*** Since wastes from facilities in the same industrial category exhibit similar characteristics, environmental regulations often include standards that prescribe discharge or emissions limits for specific categories of industries (for example, organic chemical manufacturers or pulp and paper mills).

Enforcement activities in support of industry-specific regulations will usually be organized by industry as well. India, Norway and the United Kingdom, have programs to target specific industries or processes for multimedia inspections.

- C ***Geographical*** Targeting multimedia inspections for geographical areas

may result from mandates, including national legislation or international agreements, designed to improve environmental conditions in a severely impacted area. In some cases, multimedia inspections of all potential sources in a geographical area may be necessary to obtain data that enables development of a comprehensive remedial action plan for the area. Hungary, the United Kingdom, and the United States report targeting facilities within a specific geographical area.

○ ***Pollutant-specific*** A particular pollutant or group of pollutants could be the focus of a multimedia inspection with the intent of developing a pollutant reduction plan. Specific pollutants are the focus of multimedia inspection program in most of the countries participating in the study.

By way of example, the United Kingdom's Inspectorate of Pollution, has established a comprehensive multimedia environmental program for all processes and wastes regulated under its Integrated Pollution Control regulations. All facilities operating these specified processes and generating target wastes are subject to multimedia inspections. The frequency of the Integrated Pollution Control program site specific multimedia inspections is based on risk and determined capability of the operator.

Other countries, such as India and Norway, conduct multimedia inspection program for particular aspects of their environmental enforcement program. Selecting multimedia inspection targets can be based on various factors. Norway, for example, targets the following:

- Facilities that have a higher potential to impact the environment due to the amount or types of emissions produced,
- Facilities that can have special impact on water and air quality considerations,
- Facilities that have had earlier recorded instances of noncompliance, and
- Facilities that fall within national priority areas that are required targets under international agreements (for example, initiatives to improve environmental conditions in specific geographic regions or to reduce emissions of specific pollutants).

Norway's State Pollution Control Authority has determined that facilities falling within these categories require a more comprehensive evaluation of their compliance status. Consequently, these facilities are targeted for multimedia inspections.

India inspects only targeted entities specified under the schedule contained in their environmental law. This approach allows the regulatory agency to promote pollution prevention within specific categories of industry.

The United States uses several factors to determine whether multimedia inspections are appropriate in a specific instance. These factors include location, industrial

sector, potential for multimedia discharges, compliance history, national, regional and local initiatives, environmental justice, and regional concerns. Initiatives may change over time, resulting in one specified geographic areas and/or industrial category targeted in one year, and another area/category targeted the next. Sequential targeting recognizes resource limitations in any single year. In addition, regulatory program interest may be factored into the decision. **Exhibit 3-3** presents comparative information on factors used by select countries in selecting multimedia inspection targets.

4 CASE STUDIES

As noted in Chapter 3, an environmental control program can incorporate a variety of multimedia inspection approaches into its program. This chapter describes how these approaches have been adapted into one US environmental program.

[Note: This section includes examples of case studies for the United States and a description the United Kingdom's program. Based on the availability of additional information addressing other countries, additional discussion can be added. The current discussion is provided as an example of the type of information countries should provide.]

4.1 UNITED STATES

The United States Environmental Protection Agency (EPA) has developed a policy to encourage its ten Regional offices to conduct multimedia inspections. EPA Regional offices have the discretion to determine their own approach for designing and conducting multimedia inspection programs, and how such inspections will fit into the Region=s overall compliance monitoring program.

4.1.1 Screening Inspection Program Developed by United States EPA

The United States EPA developed its multimedia screening program to identify obvious, nonpermitted activities and other noncompliant practices through the use of indicators to determine noncompliance in environmental program areas. Multimedia screening is conducted in conjunction with a single media program inspection. Information obtained during the screening inspection is generally referred to a EPA or State compliance program for follow-up, as appropriate. Follow-up can include confirmatory single media or multimedia inspections or, as appropriate, immediate enforcement action.

The United States EPA uses the multimedia screening information to 1) better target resources for the more detailed coordinated or consolidated inspections, 2) improve planning for and coordination of single and multimedia cases, and 3) more effectively ensure that all significant releases to the environment are included in any facility-specific enforcement strategy.

A multimedia screening inspection checklist developed for this program consists of about 70 questions that cover 11 regulatory programs, as well as general environmental assessment. Questions are organized by regulatory program area. Slightly less than half of the questions require field observation to answer, while slightly more than half require an interview or record review. A general screening multimedia inspection checklist modified from the EPA's check-list is included in Appendix A. Example questions for the hazardous waste program area include the following:

1. Does the facility generate or otherwise handle hazardous waste?
2. Do you see any containers of hazardous waste, land disposal units, lagoons, treatment units? How many?
3. Was there any evidence of spills, leaks, or discharges of hazardous wastes? If so, provide location and description.
4. If the facility is a generator of hazardous waste, was there a notification form for hazardous waste activity?
5. What is the facility's EPA identification number?
6. Is there any evidence of environmental impacts that have not been addressed (under specific program area screening questions)? Were there situations of possible excessive occupational exposure that should be reported to Occupational Safety and Health Administration?

4.1.2 NEIC Approach to Multimedia Team Inspections

United States EPA's National Enforcement Investigations Center or NEIC, employs multimedia inspection teams whereby several concurrent program-specific compliance investigations are conducted by a team of investigators representing two or more program offices. The team, coordinated by a team leader, conducts a detailed compliance evaluation for each of the target programs. Such inspections, appropriate for intermediate to large facilities subject to a variety of environmental laws, determine facility-wide environmental compliance. For example, they use a team approach when inspecting complex facilities, both private and public targeted by the EPA Regional offices for multimedia inspections. Team inspections are used because the complexity of these facilities can overwhelm the capabilities of a single inspector. While the compliance assessment is similar to that used in a single-media inspection, the approach is quite different. NEIC has found that a process-oriented, mass balance approach is extremely useful to completely evaluate the compliance status of the facility. (In using its process-based, mass balance approach, NEIC inspections use a process model, an example of which is provided in Appendix B.) Understanding the facility's process is also valuable in the enforcement stage, as necessary, because valuable information is gathered which may be used in developing innovative settlement terms, such as implementation of pollution prevention projects.

4.1.3 Consolidated Inspection with Compliance Assistance City of Santa Rosa, California

The City of Santa Rosa, California, Utilities Department, Industrial Waste Section sponsors the Sonoma Green Business Compliance Incentive Program, which is a compliance assistance program aimed at improving compliance with environmental regulations by providing compliance and technical assistance and positive incentives to business. The program was originally designed to reduce inflow of organic solvents to Santa Rosa's wastewater reclamation plant from its largest hazardous waste-producing industry vehicle services.

Prior to implementation of the program, inspectors for the wastewater treatment plant were responsible for monitoring discharges and issuing citations to halt illegal discharges. This created both confusion and frustration on the part of vehicle service owners, who believed the regulations and requirements imposed by eight different county offices were unclear and often conflicting. The Compliance Incentive Program was designed to reduce the frustration and help the owners comply with the requirements by providing technical assistance, multimedia regulatory streamlining, and public recognition and awareness. One tool that was developed as part of the program was a consolidated inspection checklist. Prior to the program, automotive facilities were subject to 48 pages of inspection checklists imposed by eight different county offices. Under the program, this was reduced to an eight-page consolidated checklist for automotive shops. This checklist asks basic questions that addresses the primary areas of concern for an auto shop. Topic areas include: type of vehicle service performed, vehicle wash, use of hot tank, hot spray machine, solvents parts cleaners, management of waste materials, batteries, rags, solvent recycling, air conditioning service, body shop, floor cleaning, floor drains. Example questions addressing the solvent parts cleaners include:

1. Do you have solvent parts cleaners? How many?
2. Who services the cleaners? (Name, address, phone, EPA No.)
3. If not, how is solvent handled?
4. How often are parts cleaners serviced?
5. Are receipts/manifests for waste hauled in order?
6. Are parts cleaners double contained?
7. Are there any floor drains in the area?

In addition, when auto shops sign up for the program, they receive an information package containing details on the program, best management practices (addressing all environmental media) for automotive service/repair shops, vehicle service facility checklist that is a self-inspection checklist based on the requirements of all environmental regulatory agencies, vendor list for equipment and services that could help the facility comply, and answers to the six most-frequently asked questions. Every facility that participates in the program receives a sticker certifying it is a Sonoma Green Business and that it is in full compliance.

Participating shops are inspected by the city's industrial waste inspectors or inspectors from other environmental agencies trained to make the multimedia inspection required by the program. If the shops are in compliance, they receive the sticker. If not, depending on the Enforcement Response Policy, a shop may be given a grace period in which to correct the violation. Compliance by auto shops was essentially nonexistent prior to the program, but is now significantly higher. This type of multimedia program combines a consolidated approach with a process-based approach targeted at a problematic commercial sector.

4.1.4 Mixed Approach: Facility-Wide Inspections to Reduce the Source of Toxics

United States EPA Region I and the Massachusetts Department of Environment developed a multimedia inspection protocol for various types of facilities called Facility-Wide Inspections to Reduce the Source of Toxics. The purpose of this inspection is to determine compliance with a facility's hazardous waste, air quality, wastewater, and Toxic Use Reduction Act requirements and to gather information that can be used to encourage the facility to practice pollution prevention.

The program includes three levels of inspections, with the content of each type of inspection determined by the risk posed to the public health and the environment by the facility. The three types of inspections include the following:

- **Type ACA** thorough evaluation of every aspect of a facility's regulatory compliance performance, perhaps including an audit of compliance with recordkeeping and self-reporting requirements.
- **Type BCA** detailed evaluation of only those areas of noncompliance that are likely to result in a significant risk to public health and the environment. Type B inspections and follow-up would gather information that can be used to encourage the facility to practice source reduction, particularly in order to correct violations.
- **Type CCA** cursory scan for imminent threats and significant areas of noncompliance, including unauthorized (that is, unpermitted wastestreams) and some obvious minor infractions.

The protocol for this type of multimedia inspection includes groups of instructions/questions that are used to evaluate various operations, activities, or wastestreams at the facility being inspected. For example, for a general facility evaluation regarding hazardous/solid waste, the following questions are asked:

1. Is there any evidence of on-site burial of hazardous waste?
2. Check the dumpster or other solid waste disposal staging area for evidence of hazardous waste (or industrial waste that could have an adverse impact on the environment) being improperly disposed of as solid waste.

Example questions regarding hazardous waste accumulation include:

1. Does the generator accumulate hazardous waste at or near a generation point (satellite accumulation)? If yes, are containers in good condition, are they closed when not in use, are they properly labeled?

2. Does the generator accumulate other hazardous waste on-site in tanks or containers? If yes, are containers in good condition, are they closed when not in use, are they properly labeled? If stored outside, will area contain leaks? Is there sufficient secondary containment? Is unauthorized entry prevented?

The inspector decides which of the operations, activities, or wastestreams are being evaluated and uses the appropriate groups of evaluation questions. Select example questions from the this protocol are in Appendix C.

4.2 UNITED KINGDOM INTEGRATED POLLUTION CONTROL APPROACH

In the United Kingdom, all industrial processes and wastes regulated under the Integrated Pollution Control regulations are subject to multimedia inspections, which include an assessment of the best practical environmental option. Generally, these multimedia inspections are conducted by one or two inspectors, with one inspector specifically trained in Integrated Pollution Control for the three primary media (air, land, water). The inspectors focus on identifying the best options for the process. Multimedia inspections under the Integrated Pollution Control include an assessment of pollution prevention options, as well as providing advice on how best to comply with applicable regulatory standards. Compliance advice is based on the *Chief Inspector=s Guidance to Inspectors: Process Guidance Notes*, which is a form of guidance developed for various industrial categories. The key feature of multimedia inspections under these regulations is that the inspectors specifically examine and assess the industrial process. Based on this assessment, inspectors recommend the best available technique not entailing excessive cost (BATNEEC). Given that all inspections under Integrated Pollution Control are multimedia, targeting under this program consists of determining the frequency of inspections. To determine frequency, the program assesses the risk posed by the process and the ability of the operator to operate the process in an environmentally sound manner. The United Kingdom does not conduct screening inspections for environmental requirements, but does refer related problems (that is, health and safety risk) to the appropriate Inspectorate.

References

Garn, W. John, Grimsrud, Martin L. and Paige, Dean C., *The Compliance Incentive Experience in Santa Rosa, California*, in the Third International Conference on Environmental Enforcement, 1994, pp. 527-549.

Training Course for Mexican Multi-Media Inspectors, developed by EPA in conjunction with

Mexico SEDESOL, initial course offered in March 1992.

APPENDIX A

General Multimedia Screening Checklist (Based on United States EPA Version)

APPENDIX B

Example Process Model for Process-Based Multimedia Inspections

APPENDIX C

Example Questions from the EPA and Massachusetts Department of Environment Facility-Wide Multimedia Inspection Program

APPENDIX D

Example of Multimedia Checklist for Printing Operations Incorporating Pollution Prevention

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²endnote text

