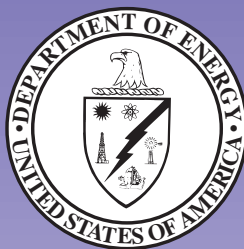


Environmental Management Systems Primer for Federal Facilities

***Prepared by:
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1- INTRODUCTION

This guide is designed to help Federal managers who are considering adopting an environmental management system (EMS). Properly implemented, an EMS can reduce support costs and improve productivity while advancing environmental protection and performance. It can put Federal environmental management practices on the same level as those of America's best-run corporations. And it can do so in visible ways that will be recognized by stakeholders inside and outside a Federal agency.

The most familiar form of an EMS is the 14001 Standard recently established by the International Organization for Standardization (ISO). Although there are standards for other EMSs, ISO 14001 is becoming widely adopted throughout the private sector in the United States and internationally. Many agencies of the U.S. Government are considering its adoption as well, and several have adopted it (at the local level). Throughout this document, references to EMS encompass ISO 14001 as well as other environmental management system standards.

This guide is not intended to be a technical or detailed manual on EMS implementation. Rather, its goal is to help Federal managers understand EMSs and how one can help them improve environmental management at their facilities. This *Primer* also outlines the elements of an EMS, offers tips on how to make the case for an EMS to upper management, explains how an EMS will benefit an organization, and places EMSs in the context of regulations, compliance issues, pollution prevention, and other government programs.

Environmental management systems are “that part of the overall management system which includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy.”
– ISO 14001, Environmental Management System Standard

Each chapter in this *Primer* deals with a key EMS issue for Federal facilities. At the end of the document you will find references to Internet web sites, books, reports, and newsletters for more information.

WHAT IS AN ENVIRONMENTAL MANAGEMENT SYSTEM?

An EMS is a systematic approach to ensuring that environmental activities are well managed in any organization. The side box above lists the specific ISO definition of an EMS. Because an EMS focuses on management practices, it can operate at facilities of widely varying size, complexity, and missions, whether they be offices, laboratories, ships,

facilities, programs, or agencies. An EMS can provide Federal managers with a predictable structure for managing, assessing, and continuously improving the effectiveness and efficiency of the management of their environmental activities. An EMS approach builds in periodic review by top management and emphasizes continuous improvement instead of crisis management.

The systematic nature of the EMS allows an agency to focus on management implementation and take a more inclusive and proactive view of environmental protection. By demonstrating improved environmental performance, an EMS can open the door to improved relations with regulators, stakeholders, and the public. But don't expect instant credibility! By itself, an EMS does not guarantee performance or compliance. Regulators, communities, and environmental groups must see credible evidence that an EMS is being used to ensure compliance and advance environmental and mission goals.

Adopting an EMS approach does not mean that "one size fits all." Quite the contrary. Each agency, facility or program can structure an EMS to address its particular goals, activities, budgets, missions, conditions, and stakeholders.

The basic elements of an ISO 14001 EMS (see box) should already be familiar to most Federal managers and are discussed generally in Chapter 2. This familiarity allows agencies to use and adapt existing environmental management activities. Adopting an EMS approach rarely requires beginning from scratch. Many facilities will find they have most or all the elements of an EMS already in place. Complex sites, such as those with numerous program elements or host-tenant relationships, may be faced with multiple, inconsistent, or unrelated elements of environmental programs. A formal EMS can help draw together such elements, producing a clearly defined environmental policy statement and an integrated framework for environmental activities.

<p>ISO 14001 EMS Elements</p> <ol style="list-style-type: none">1. <i>A Policy Statement</i> endorsed by top management.2. <i>Planning</i>: identifying how operations impact the environment, setting goals and targets for reducing impacts, tracking legal and other requirements, and developing systems for environmental management.3. <i>Implementation and Operation</i>: assigning roles and responsibilities, training, communication, documentation, and emergency preparedness.4. <i>Checking and Corrective Action</i>: establishing ways to monitor, identify and correct environmental problems.5. <i>Management Review</i> focused toward continuous improvement.

Unlike a regulation, an EMS is voluntary. Hopefully, though, it will change the way your site, program or agency does business, engage the senior leadership of your organization, and help get the right information to the right people at the right time. Of course, having an EMS in place does not by itself guarantee the competence or abilities of those responsible for compliance activities. Appropriate training and assignment of responsibilities are also needed and should be identified as components of the EMS.

EMS IN THE CONTEXT OF OTHER INITIATIVES

Federal facilities face a complex array of statutory and executive mandates, and operate in a dynamic context. EMSs offer new challenges and opportunities for integration with other initiatives. For example, EPA has developed several programs to test regulatory innovation and flexibility. Both the Environmental Leadership Program (ELP) and Project XL (eXcellence and Leadership) involve the use of EMSs and are open to Federal participation. Furthermore, a thoughtfully implemented EMS can help integrate management practices for environment, safety, and health (ESH) programs. Other statutory and programmatic requirements which relate to an EMS include:

► **National Technology Transfer and Advancement Act of 1995 (NTTAA)**: With passage of NTTAA, Federal agencies are required to consider using technical standards. This includes standards for "related management practices" developed by voluntary consensus bodies, unless inappropriate or illegal. However, NTTAA does not expressly require adoption of EMS or other standards. Agencies may use self-developed standards if approved by OMB or, if necessary, retain agency-specific standards.

► **Government Performance and Results Act of 1993 (GPRA)**:

GPRA requires Federal agencies to report on their goals and how well they achieved them. GPRA does not require agencies to include environmental measures. However, should an agency choose to do so, performance indicators used to meet EMS goals and targets could be combined on an agency-wide basis and included in an agency's GPRA measures

(e.g., reducing toxic emissions, conserving energy or water, or decreasing solid waste).

GPRA Mandates:

- **Agencies must have strategic plans prior to FY 1998:**
 - a) **goals and objectives**
 - b) **plans for meeting goals and objectives**
 - c) **resources necessary**
 - d) **key external factors**
- **Agencies must submit annual plans describing their goals and comparing performance to goals**

< **National Environmental Policy Act (NEPA)**: Federal agencies are required under NEPA to evaluate the environmental impacts of their proposed activities. The outcome of the evaluation can range from a Finding of No Significant Impact, to a Categorical Exclusion, to a Programmatic Environmental Impact Statement covering many sites. The NEPA process requires public notification and participation, and can be lengthy. An operating EMS can contribute to fulfilling NEPA requirements by drawing on EMS data for the NEPA scoping and analysis efforts. Conversely, existing NEPA data can be used in identifying the environmental aspects and impacts of a site's activities and provide the management system framework to ensure effective implementation of mitigation measures.

CEMP Principles

1. **Management Commitment:** The agency makes a written top-management commitment to improved environmental performance by establishing policies that emphasize pollution prevention and the need to ensure compliance with environmental requirements.
2. **Compliance Assurance and Pollution Prevention:** The agency implements proactive programs that aggressively identify and address potential compliance problem areas and utilize pollution prevention approaches to correct deficiencies and improve environmental performance.
3. **Enabling Systems:** The agency develops and implements the necessary measures to enable personnel to perform their functions consistent with regulatory requirements, agency environmental policies, and its overall mission.
4. **Performance and Accountability:** The agency develops measures to address employee environmental performance, and ensure full accountability of environmental functions.
5. **Measurement and Improvement:** The agency develops and implements a program to assess progress toward meeting its environmental goals and uses the results to improve environmental performance.

► **Code of Environmental Management Principles (CEMP):** The CEMP is a set of five management principles developed by EPA to provide Federal agencies with a framework for developing EMSs at government facilities. EPA modeled the CEMP on common elements found in a number of EMS standards but with a stronger emphasis on sustainable development and regulatory compliance. EPA recognizes the similarities between the CEMP principles and ISO 14001, and has accepted ISO 14001 as an option for Federal agencies to use in implementing the CEMP. Sixteen Federal agencies have endorsed principles of the CEMP and several are using ISO 14001 at the facility-specific level. The CEMP (published on October 16, 1996, 61 Federal Register 54062) was developed in coordination with other Federal agencies, as required by Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements."

► **Contract Reform:** An EMS can aid Federal managers in translating environmental risk management into common performance terms, allowing all facility elements (and their contractors and vendors) to "plug into" a set of general structures and performance expectations. Performance-based contract language that references use of an EMS allows Federal managers to define acceptable management practices and environmental outcomes for their operations, while providing cost-saving flexibility to contractors and vendors. This lets the government harness the legitimate commercial interests of contractors and suppliers, consistent with productivity and mission goals at Federal facilities.

OBTAINING RESOURCES

Because an EMS builds upon existing programs, fewer new costs are incurred in adopting an EMS than in designing a whole new system. Nevertheless, obtaining the resources needed to put the system in place can be a hurdle in any Federal office facing budget constraints. It is worth noting, therefore, the many benefits that an EMS can provide that yield tangible returns on an EMS investment:

- Provides an agency-wide environmental management framework: cuts costs associated with each site developing its own programs from scratch
- Reduces support costs: integrates site contractors and activities
- Supports risk management: reduces risk profile and diminishes liability
- Supports performance-based contracting: defines acceptable management practices and environmental outcomes for Federal facility operations, and provides cost saving flexibility to contractors
- Helps avoid gaps and overlaps: improves cost-effectiveness as well as performance
- Shows due diligence: demonstrates to regulators objective, documented, systematic procedures to prevent, detect, and correct violations
- Integrates related ES&H activities (e.g., pollution prevention and worker safety)
- Improves recognition of pollution prevention opportunities: saves on storage and disposal costs and reducing liability
- Eases deployment of new technologies: avoids high start-up and transition costs.

WHAT THIS DOCUMENT CONTAINS

This *Primer* reviews key EMS issues affecting Federal agencies and facilities. Following this introduction, Chapter 2, *Getting Started*, provides suggestions for accessing information and understanding and applying EMS elements. Chapter 3 addresses *Measuring Performance*. Chapters 4 through 7 discuss the relationship of EMS to key environmental institutions: *Compliance and Regulations*, *Innovative Programs*, *Pollution Prevention*, and *NEPA* issues. Chapter 8 deals with *Audits and Certification*, and Chapter 9 is *An Invitation to Environmental Leadership*. Appendices provide reference materials and state EMS contacts. As understanding of EMS issues expands, periodic updates to this document are planned and will be posted on the Internet.

2 - GETTING STARTED

Federal facilities have a wide range of missions, activities, locations, resources, organizations, and environmental track records. Some have highly sophisticated environmental protection and compliance assurance programs, including most or all elements of a fully-functioning EMS. Others may have few environmental capabilities, fewer resources, and little representation of environmental issues at senior levels within their agency. Between these two extremes are most Federal managers who may be considering use of an EMS.

This chapter is designed to help Federal facility managers get started in planning and implementing an EMS. This includes gaining access to information, as well as understanding the basic EMS elements.

GAINING ACCESS

Learning more about EMS approaches such as ISO 14001 can be straightforward for anyone with Internet access. A rapidly expanding set of World Wide Web sites provide a wealth of information, contacts, tools, services, organizations, meetings, and conferences. Federal managers can also join Web site discussions on EMS topics and rapidly learn from the experience and opinions of others. Once you feel grounded and comfortable with EMS issues, you can make informed choices about buying books, subscribing to newsletters, or engaging consultants.

"Years ago, if you asked organizations, especially large ones, if they had an environmental management system, they would usually respond 'of course.' Most of these organizations in fact had systems for compliance, for waste management, for permitting, etc. So, naturally, we thought we had systems. But, did we have a system as defined, complete, coherent and structured as ISO 14001? Now, I would say no, we did not. I don't think we even knew enough then to know that we didn't have one."

– Joe Cascio, Chair,
U.S. Technical Advisory Group to ISO

"(ISO) 14001 doesn't call for environmental performance and certainly doesn't call for environmental performance improvement. It calls for systems improvement. We think the result is going to be a smarter way to approach environmental management that leads to environmental improvement."

– Mary McKiel (EPA), Vice Chair,
U.S. Technical Advisory Group

This *Primer* includes a substantial bibliography, emphasizing ease of access and applicability to Federal facilities. Web sites listed are generally accessible without cost and can help narrow down your own range of interests. A selected list of books, reports, and newsletters is also included in the bibliography. While many of these materials are business oriented, in addition to this *Primer* there are a number of government sites and sources of information. This *Primer* does not endorse particular references; like any growing literature, the sources exhibit a range of quality and applicability.

Facility managers can also look for EMS working groups within their agencies and across the Federal complex. The *EMS Interagency Work Group* currently includes representatives from 18 Federal agencies. It is co-chaired by Mary McKiel (mary.mckiel@epamail.epa.gov) of EPA and Larry Stirling (john.stirling@eh.doe.gov) of the Department of Energy. Regular meetings focus on developing and sharing information and addressing common issues, and detailed notes are available to Federal employees.

UNDERSTANDING THE EMS ELEMENTS

This section generally discusses the five major elements of the ISO 14001 EMS Standard and suggests helpful ways of implementing an EMS.

(1) Policy Statement

The first essential element in developing a successful EMS is *obtaining top management commitment*. The importance of obtaining buy-in of agency or facility leaders cannot be over-emphasized. Strategies for engaging upper management by linking use of an EMS to mission priorities are discussed later in this chapter.

When senior managers have been engaged, work can accelerate on preparing an *environmental policy statement*. The policy must eventually be endorsed by senior managers, should reflect the nature and scale of the organization's activities, and must embody the organization's commitment to:

- ▶☐ Compliance with laws and applicable requirements
- ▶☐ Prevention of pollution
- ▶☐ Continuous improvement.

Following (or concurrently with) development of a policy statement, facility managers should evaluate their existing environmental programs and capabilities. Some experts recommend that an *initial review* be done even before the policy statement is developed. That way, managers can better tie the facility's policy statement to the planning stage. Once the policy statement has been endorsed by senior managers, it needs to be communicated to all staff and made available to the public.

(2) Planning

Planning is the next key element in developing a successful EMS. Managers may find it useful to review existing planning and budget documents as they reflect on the organization's missions, location, activities, and history. Using existing system elements, terminology, and concepts wherever possible will save time and resources and allow the EMS to fit more naturally into the organization's culture. Key questions to ask during this phase include the following:

▶ **Environmental Interactions:** How do the organization's activities (aspects) interact with the environment? Do they produce waste? Are hazardous materials involved? Are operations located in ecologically sensitive areas? How much water and energy are used?

▶ **Environmental Impacts:** How are the significant impacts of environmental activities currently identified? What effect could an accident have on the environment? Can a risk assessment strategy be used to identify the most significant impacts?

▶ **Applicable Regulatory Requirements:** How does the organization track laws and regulations relating to its activities? Is there a list of applicable requirements? Is a specific person in charge of updating that list? How are new regulations communicated?

▶ **Other Requirements:** Has the agency (or facility) made commitments beyond compliance, such as endorsing the EPA Code of Environmental Management Principles (CEMP) for Federal agencies? Are there ways to support other strategic agency priorities or initiatives? For example, could an EMS help streamline NEPA actions, integrate risk management, or facilitate implementation of new technology? Could it aid in integrating Environment, Safety and Health protection?

This thorough examination of activities and practices that affect the environment should help facilities improve their compliance profiles and identify and prioritize environmental risks which then are addressed by an EMS.

Environmental Objectives and Targets

The next step is to identify *environmental objectives and targets*. Objectives describe the organization's goals for environmental performance. Examples include emissions goals, pollution prevention, use of raw materials, or incidence of non-compliance. Targets are specific and measurable intermediate steps that can be measured in terms of obtaining the objectives. An example is "Achieving a 50% reduction in releases of certain toxic substances within two years."

Performance indicators can give a sharper focus to goal-setting (see Chapter 3). Developing performance indicators allows managers to assess compliance status, manage environmental liability, evaluate risk, track progress and meet the challenge of continuous improvement.

(3) Implementation and Operation

Successful implementation of an EMS requires clear articulation of environmental responsibilities across the various elements of organization. Environmental responsibilities cannot be confined to the environmental office or a designated bureau; they must be recognized as a prime responsibility of all employees, including line management. Top management has two important contributions to make at this stage:

- Top management must designate a specific **management representative** with authority and responsibility for implementing the EMS.
- Top management must provide **adequate resources** (including an operational infrastructure) to ensure proper implementation of the EMS.

Other important parts of the implementation and operation element of an EMS, discussed in more detail below, include training, communications, documentation, operational control, emergency preparedness, and monitoring and measurement.

► **Training, Awareness, and Competency:** Everyone in the organization should receive some form of training in environmental responsibilities, tailored to the nature and extent of the potential environmental impacts of the employee's job. Contractors working on site must be able to demonstrate that their employees have the necessary environmental training. All employees should be able to identify and explain the environmental consequences of failing to properly conduct their jobs. The necessary knowledge, skills and abilities (competencies) needed to achieve environmental goals must be identified and developed. Finally, the organization should be able to document that employees have received the type and level of environmental training appropriate for their jobs.

► **Communication and Reporting:** Effective communications are necessary to motivate and direct employees, and build confidence and acceptance with the public and other Federal, state, and local regulators. Some important questions to ask include:

- What is the process for communicating an organization's environmental policy?
- Is the process working well? Do communications typically run smoothly or in "crisis" mode?
- Are the right audiences being reached, internally and externally? How broadly has the net been cast? Typically, there are more interested parties than first meets the eye!
- How are the concerns of internal and external parties received and addressed?
- How much of the organization's communications are "one-way" rather than "two-way" dialogues?
- How are employees and contractors informed of management initiatives and other directives?
- How is feedback from management reviews, external audits, etc. incorporated into decision-making?
- How are the results of corrective actions communicated to appropriate audiences, internal and external?
- How can continual improvement in environmental issues be effectively communicated?

Communication can include a wide variety of techniques and venues, such as written directives, electronic messages/bulletin boards/reports, regular employee meetings, public meetings, citizens advisory boards, ad-hoc work groups, press releases, periodic reports, newsletters, etc. The bottom line is to be open, honest, fair, accurate, and factual.

► **EMS Documentation:** There are no hard and fast rules about what should be documented in implementing an EMS. What should be included depends on the needs of the organization. Keep documentation simple and to a minimum, but do include the core elements of the EMS: the environmental policy statement; the means of achieving the environmental objectives and targets; key roles, responsibilities and procedures; organizational charts links or references to related documents, site emergency plans; and EMS procedures. Some questions to consider include:

- Are document management procedures in place to ensure that documents are kept current at all locations where they are needed?
- Does your organization have a process for maintaining EMS documents?
- Are the EMS documents integrated with existing documentation?
- How are documents made available to current and new employees?
- Does the documentation demonstrate how the EMS supports your organization's mission goals?

► **Operational Control:** Operational control refers to procedures that help an organization implement its environmental policy, objectives and targets. Managers should start by looking at existing procedures and asking questions such as:

- Are existing procedures adequate to control the significant environmental impacts? Do they need to be strengthened, re-focused?
- Are existing procedures adequately documented? Are they up-to-date?
- Are personnel aware of existing procedures and using them? Do new procedures need to be developed instead?

All activities that have significant environmental impacts should be addressed by an appropriate operational control. This may encompass a larger universe than a traditional compliance-based analysis. Again, keep the procedures as simple as possible, and involve the people who work on each process in developing or modifying the operational controls. Operational controls should be easy to understand and relevant to the process.

► **Emergency Preparedness and Response:** Organizations should develop plans and procedures to prevent accidents from occurring in the first place, and to respond to emergencies when they occur. These plans should be site-specific, addressing the unique hazards posed by each facility. An emergency preparedness and response plan could include:

- A hazard assessment
- Emergency organization and responsibilities
- Key personnel, their areas of expertise and contact numbers

- Plans for responding to emergencies (including first responders such as fire and rescue departments, chemical response teams, U.S. Coast Guard)
- A communications plan
- Actions to be taken in various types of emergencies
- Information on hazardous materials, potential human health and environmental impacts, response measures
- Periodic testing, training and evaluation.

Many Federal agencies are already addressing emergency preparedness. The Emergency Planning and Community Right To Know Act (EPCRA) of 1986 and Executive Order 12856 require Federal agencies with quantities of hazardous substances above specified thresholds to submit Material Safety Data Sheets (MSDS) and Hazardous Chemical Inventory reports (Tier I or Tier II) to the Local Emergency Planning Committee (LEPC), the State Emergency Response Commission (SERC), and the local fire department. The EMS should build on and complement these systems.

► ***Monitoring and Measurement:*** An organization should measure and monitor its environmental performance against its objectives and targets. Monitoring can help managers identify and evaluate the root causes of problems and implement appropriate corrective actions. Meaningful performance indicators should also be developed. These performance indicators should be objective, verifiable, and reproducible, and they should be relevant to the organization's activities and linked to the environmental policy, objectives, and targets. Key processes, especially those that have significant impacts on the environment, should be measured, and monitoring equipment calibrated.

(4) Checking and Corrective Action

As an EMS is implemented, managers may find various system deficiencies. This is normal and to be expected. No system is perfect. The important thing is to establish a procedure to assess the root causes of the deficiency, and to take corrective actions to remediate the problem. It is important to assess the corrective actions as well, to determine if they are effective in remedying the deficiency. If not, the problem itself may not have been accurately diagnosed. Continuing or multiple deficiencies may indicate some fundamental, systemic deficiencies that warrant further examination and response. Checking and corrective action are typically ongoing activities.

(5) Management Review

Management must periodically step back and evaluate the performance of the EMS as a whole. Managers should ask questions such as:

- Is the EMS working? Is it adding value?
- Is the EMS cost-effective?
- Does the EMS adequately respond to changing external conditions or requirements?
- Is the EMS contributing to achieving the mission of the organization?

There are no set requirements regarding the frequency and extent of the management review. These will vary according to the size and nature of your organization and how stable or dynamic your external influences are. Managers should be encouraged to make public some form of the results of the management review. All decisions and corrective actions should be documented and communicated to the appropriate employees, and progress in implementing the action items should be tracked and evaluated. Management may wish to use the management review as a vehicle to revise organizational goals, targets, policies and plans.

SPECIAL TIPS

Even at complex installations, adopting an EMS need not be complicated and expensive. Here are some tips to make the process go smoothly:

▶ **Link the EMS to Management Priorities:**

How do you obtain the necessary strong upper-management support for an EMS? One way is to show managers that an EMS can help achieve agency priorities in addition to improving environmental performance. For example, an EMS can demonstrate

world-class management at a facility competing for new agency missions or expedite the use of cost-saving cleanup technologies.

▶ **Use a Gap Analysis and Maximize Use of Existing Capabilities:**

Adopting an EMS should not require throwing out systems and starting over. To get the greatest value out of existing capabilities and systems, conduct a "gap analysis." This involves determining where there are gaps between current operating systems and specifications of the EMS standard. Of

course, a gap analysis conducted with boilerplate checklists or by people with little direct knowledge of the facility will not help much. The gap analysis can be made more effective by gathering facility managers responsible for systems, and asking them to decide which existing systems can be best adopted, extended, integrated or adapted. Worker input is especially valuable, and should also be solicited.

Summary of Special Tips:

- Link EMS implementation to management priorities
- Fully use existing capabilities
- Include stakeholders from the start
- Focus on EMS as a framework
- Defer decisions on third-party registration

"Look for the choke-points... An EMS won't be able to fix them all but it may be able to knock corners off things that are driving everyone crazy..."

– Department of Energy contractor

► **Include Stakeholders from the Start:** Federal facilities usually have multiple regulators and stakeholders — often with different views and priorities. Involving stakeholders (including regulators) in implementing an EMS shows respect for their views and can provide valuable input. The degree of stakeholder involvement will vary with the mission, history of the facility, and current stakeholder relations. Both internal and external stakeholders will appreciate early inclusion in the implementation process, particularly in areas with outcomes they consider important.

► **Focus on EMS as a Framework:** An EMS should be seen as a facility's environmental management framework, rather than a set of activities. As missions, budgets, priorities, and staff continue to change, the structure of the EMS framework will remain predictable while particular applications change. Thus new activities, contractors, or suppliers can be "plugged into" (or unplugged from) this commonly understood framework with minimal disruption, downtime, overlaps, and errors.

► **Defer Decisions on Third-Party Registration:** Federal facilities implementing the ISO 14001 EMS standard can "self-declare" when they reach full implementation of the standard. Alternatively, they can be formally reviewed by an independent or "third-party" registrar. The benefits and costs of third-party registration for ISO 14001 are unclear at this time for both private and public sector organizations (see Chapter 8 for more discussion). Federal managers can simplify their choices by deferring consideration of third-party registration. Unless there is a compelling reason to register your facility, you may want to focus instead on implementing a fully-functioning EMS.

3 - MEASURING PERFORMANCE

Performance measurement is critical to the success of an EMS, and for this reason has a chapter devoted to itself. This chapter describes some of the ways of measuring performance in the Federal sector, and gives basic guidelines for managers in developing performance measures. Guidance on setting up a measurement process is available from ISO 14031 and a growing body of literature (see Appendix A for selected listings).

Performance measures translate organizational goals and targets into operational terms. They can be pivotal in an organization's ability to define and demonstrate progress toward meeting its goals. When appropriately developed and effectively communicated, performance measures can be understood and supported by everyone in the organization, facilitating the feedback needed for continuous improvement. Furthermore, involving the public in developing a facility's EMS can be an a valuable opportunity to build community support for facility missions and programs.

With passage of the Government Performance and Results Act of 1993, measuring performance in the Federal government assumes an even greater importance. GPRA requires Federal agencies to prepare annual plans setting performance goals beginning in fiscal year 1999, and to report annually on actual performance compared to performance goals. Performance in environmental impacts and compliance, and in worker and public safety will need to be reflected in GPRA reports.

WHAT GETS MEASURED?

"What gets measured gets managed" goes the saying. But defining what should be measured – and at what organizational level it will be measured — is crucial to the success of an EMS. EMS measures appropriate for one organizational level may be inappropriate at another.

General EMS performance measures are often appropriate for higher levels within the organization or for an agency-wide effort. A research lab within a larger installation, on the other hand, might need more specific measures, such as an EMS performance measure for pollution prevention to reduce the risks from storage and transfer of hazardous materials. It is important

Performance measures enable organizations to:

- **Focus on progress toward goals**
- **Benchmark with best-in-class**
- **Identify what is and is not working**
- **Aid internal & external communication**
- **Demonstrate accountability**
- **Evaluate program costs**
- **Identify opportunities for improvement**

to ensure that the more specific EMS performance measure remain tied to the high-level measures. This will help ensure an integrated approach to managing environmental performance.

TYPES OF MEASURES

Identifying measures that are meaningful in improving management and/or environmental performance can be a daunting task. Potential pitfalls include overreaching (trying to measure everything), or focusing on activities that are easy to quantify rather than on

desired results directly keyed to organizational goals. It is also important to avoid measures outside the span of control of the managing organization. This can lead to frustration by individuals charged with achieving results outside their control and can undermine overall effectiveness of efforts to measure performance.

Performance measures should be:

- **Goal driven**
- **Appropriate to the organizational level**
- **Able to measure results rather than activities**
- **Able to track trends**
- **Understandable to all**
- **Within the span of control**

In an EMS approach such as ISO 14001, performance can be evaluated and measured in several ways: by using environmental attributes, by gauging how well the EMS itself is functioning, or by benchmarking against the performance of other organizations.

► **Measuring Environmental Attributes:** Traditionally, measuring environmental attributes has focused on quantitative measures of regulated pollutants (e.g., tons of emissions, gallons of effluent, or volumes of generated waste). These measures help identify when certain regulatory thresholds have been met or track activities that can have direct impacts on the environment. As an example, factories may measure, control, and reduce emissions of sulfur dioxide consistent with the provisions of the Clean Air Act. Traditional measures such as this continue to be important because they can translate directly into environmental performance.

► **Measuring EMS Performance:** Measuring the performance of an EMS and the interaction of EMS components is very important and it can be a challenge. One approach to selecting appropriate system measures is to consider how the system responds to changing conditions. For example, in evaluating how elements of an EMS respond to a regulatory change, possible measures could include how the system:

- Determined the regulation's applicability
- Incorporated it into training
- Communicated it throughout the organization
- Incorporated it in operating procedures
- Incorporated it in self-assessment protocols

- Used it for pollution prevention and continuous improvement and compliance
- Used it to adjust objectives and targets.

► **Metrics and the Multi-State Working Group:** A number of State environmental regulators are participating in a Multi-State Working Group on EMS to explore the utility of EMS, especially those based substantially on ISO 14001. The effort is becoming a partnership with Federal regulators, with the goal being to gather credible and compatible information of known quality. The idea is to have adequate information to address key public policy issues such as the effect of EMS environmental performance, environmental conditions, compliance with environmental requirements, stakeholder involvement, pollution prevention activities, and the costs and benefits of environmental activities. The primary mechanism to generate this information will be pilot projects wherein entities implement an EMS.

In an effort to coordinate the work of the State and Federal-based groups, EPA has issued a Statement of Common Purpose with the Multi-State Working group on EMS to ensure that the data gathered through both the State and Federal pilot projects can be quantified, compared, and used to create a common data base. A guidance document is under development which describes the general categories of information and data that will be gathered through the pilot projects. This guidance is a companion document to more specific data protocols (also under development) which will contain the specific questions and categories used by the individual facilities to gather data and information regarding EMS performance.

► **Benchmarking** is a term often used for the comparison of one organization against others. Benchmarking allows the organization to see how it compares with those whose performance it wishes to emulate, and allows the organization to benefit from the experience of peak performers. Measures might include trend data, goals and targets, accepted norms, professional standards, intra-program comparisons, and external comparisons with entities doing similar work. A baseline to which progress can be compared must be established; as always, it is important to measure the baseline accurately because it will affect the interpretation and findings of the performance measures. There is a growing literature on benchmarking environmental management systems (see Appendix A).

In the Federal facility context, EPA engaged in a benchmarking exercise and found that despite a movement towards management system auditing by the larger Federal agencies, most of the smaller Civilian Federal Agencies (CFAs) still were focused on compliance audits and had no system in place to examine their environmental management program. EPA's survey of these CFAs resulted in the 1994 report entitled *Environmental Management System Benchmark Report: A Review of Federal Agencies and Selected Private Corporations* (EPA Document Number EPA-300R-94-009), which compared environmental management programs at CFAs to those at the Department of Defense (DOD), the Department of Energy (DOE), and three private corporations. What EPA generally discovered was that there was weak management support for environmental compliance at many Federal agencies, as well as a lack of formality to the environmental compliance programs, especially at CFAs. EPA also discovered that

training programs were inadequate at many Federal agencies, and that performance measures and accountability were lacking.

Performance measures should be both quantitative and qualitative. Measures should evaluate the final outcome and how long it took to reach it. For example, it may take only hours to inform staff of a new regulation (say, via electronic mail), but if the information simply consists of a reference to a *Federal Register* notice, the effectiveness of the communication aspect of the system will be diminished.

Effective EMS performance measures can be a tremendous asset to Federal managers in navigating ongoing change. However, these same changes can impact performance measures themselves. Thoughtful interpretation is required and unexpectedly strong or poor performance results should be carefully reviewed. Poor results do not necessarily indicate poor execution. Poor results can signal unrealistic expectations or changed conditions or inadequate definitions of the performance measures. Conversely, apparently terrific results can result from both strong performance or a change of mission, budget, or activity. The periodic management review that Federal managers will implement as part of an EMS must include a review of the appropriateness of the performance measures to help chart agency and facility progress toward meeting organizational goals.

Because measurements only approximate the actual program, the old cliché, "garbage in, garbage out" can be especially striking when tracking EMS performance. Most everyone has a favorite example of performance measures gone haywire, which actively undermine the very goals the measures were designed to advance. To avoid this scenario, and the turmoil and underperformance that can accompany it, Federal managers should evaluate performance measures in the full context of their operations.

► **EPA Position Statement on EMS and Request for Comment on Data**

EPA recently published its Position Statement on EMS and ISO 14401 and a Request for Comments on the Nature of the Data to be Collected from EMS/ISO 14001 Pilots (63 FR 12,094, March 12, 1998). EPA supports and will help promote the development and use of EMSs, including those based on the ISO 14001 standard, that help an organization achieve its environmental obligations and broader environmental performance goals. EPA encourages the use of EMSs that focus on improved environmental performance and compliance as well as source reduction (pollution prevention) and system performance. EPA supports efforts to develop quality data on the performance of any EMS to determine the extent to which the system can help bring about improvements in these areas. The *Federal Register* Notice also solicits comment on the categories of information and data that will be gathered through the pilot projects including environmental performance, compliance, pollution prevention, environmental conditions, costs/benefits to implementing facilities, and stakeholder participation and confidence.

Measures vs. Outcomes

Measures are elements an organization will want to track as a trend over time, such as:

volume of a key hazardous material purchased, BTUs of energy consumed, or concentration of a residual in wastewater discharged.

Outcomes are levels the organization wants to achieve, such as: a 5 percent reduction in volume of hazardous material purchased, installation of high-efficiency lighting in 50 percent of office space, or zero discharge of process wastewater.

4 - COMPLIANCE AND REGULATIONS

What can an agency or facility expect from regulatory authorities in return for adopting an EMS? What weight should an EMS be given by regulators and inspectors in evaluating compliance? Will external stakeholders, especially those directly affected by a Federal facility's environmental performance, accept the use of an EMS as a complement to more traditional approaches for achieving environmental protection? How do regulators view EMSs in the context of compliance? These are important questions with no simple answers. This chapter focuses on the relationship of EMSs to regulatory compliance.

THE REGULATORY PERSPECTIVE

Regulations and enforcement have driven most improvements in environmental performance for the past 25 years. Until the last decade, the idea that Federal facilities had sovereign immunity from penalties, enforcement, and certain governmental regulations was widely held. Since then, the Federal Facilities Compliance Act of 1992 has changed the nature of Federal facility compliance and enforcement by expressly waiving sovereign immunity in the RCRA context. Subsequent reauthorizations of statutes like the Safe Drinking Water Act have continued this trend of waiving sovereign immunity.

Federal facilities have made substantial strides toward attaining and maintaining compliance in recent years. With improvements in compliance, dramatic environmental gains are less likely to be seen. Regulatory authorities are exploring new alternatives and innovative approaches to improve performance.

An environmental compliance system focusses on compliance with Federal, State and local requirements. An EMS is not fundamentally a compliance system. An EMS focusses on management systems. However, an effective EMS can be an important part of a compliance system, and can reasonably be expected to ensure and improve environmental compliance.

**"[ISO 14001 may] may foster improved environmental compliance and sound environmental management and performance. ISO 14001 is not, however, a performance standard. Adoption of an EMS pursuant to ISO 14001 does not constitute or guarantee compliance with legal requirements, and will not in any way prevent governments from taking enforcement action where appropriate."
– North American Commission for Environmental Cooperation Resolution, June 12, 1997**

**"Be prepared for potential stiff resistance from internal environmental advocates. Some may incorrectly believe ISO is a mechanism companies will use to avoid [compliance with] environmental laws."
– Department of Energy (DOE)
Management & Operations Contractor**

In this context, the question is often framed whether organizations adopting an EMS (such as ISO 14001) have "earned" some form of decreased regulatory oversight. There are a number of reasons why regulatory authorities are cautious about offering decreased oversight as an incentive for EMS implementation. These reasons include:

► ***Limited Empirical Data:*** The international EMS movement has gained influence over the past decade, but the number of organizations in the United States with a comprehensive EMS is still relatively small. Some of the systems that have been implemented have suffered from a lack of common definitions regarding the elements of a complete EMS. The rise of ISO 14001 is expected to change that, but the track record of EMSs in improving performance is not yet well established. Additionally, Federal facilities often answer to multiple regulators who don't necessarily speak with one voice. More empirical data should become available as more EMSs are implemented and as more lessons are learned and shared.

► ***Compliance Orientation:***

The basic mission of any regulatory authority is to ensure compliance. The compliance approach to environmental protection has paid great dividends. Many in the regulatory arena are understandably reluctant to

**"If you can systematize your approach to environmental regulation, and beyond regulation, you have a better chance of having consistency when those of us in the regulatory community knock on your door."
– Mary McKiel, EPA Standards Network**

abandon such a successful approach, and may not have the discretion or authority to do so. Regulators do not want to be seen as abdicating their responsibilities or risking their credibility. Therefore, innovations that encourage a softened approach to compliance will generally be subject to a heavy burden of proof, and implementing an EMS should not be thought of as an alternative to an environmental compliance system. An EMS can, however, provide the basis for negotiating flexibility in certain areas where regulators have discretion.

► ***Accountability and Verification:*** EMS certification under ISO is performed by an independent third party, not by a regulator. Some have voiced the concern that it might be possible to "shop around" for an agent willing to certify a facility's EMS. Although the certifying agent must be trained and accredited, the process is continually being improved and strengthened as experience grows. Regardless, regulators need to have confidence in the certification process. Given that registration and certification do not guarantee performance or compliance, regulators feel uncomfortable with the process because they will be held accountable by the public for any resulting decline in performance at the facility. But remember that an EMS can help improve the accountability of people in regulated entities, and should support a management framework for improving performance and compliance.

Until EMSs build a track record of performance, the regulatory stance toward EMSs will remain unclear. Certainly, adopting an EMS solely to secure 'regulatory relief' is a wrong reason to adopt an EMS and is guaranteed to be a disappointment. Over time, however, it is possible that EMSs may replace certain elements of regulatory oversight (such as inspections or permits) where regulators have the discretion. A more cautious view holds that an EMS has the potential to harmonize and complement regulatory oversight.

An EMS can, however, help improve ongoing relations with regulatory authorities and stakeholders by making the management structure and procedure more visible to regulators. EMSs provide the opportunity not only for specific types of improvements — reduced emissions, initiating self-reporting and correction programs, stakeholder participation in setting pollution prevention goals, or fewer unplanned releases — but also a framework that gives outside parties an understanding of how environmental issues are being managed.

By the same token, adopting an EMS can also indirectly reduce regulatory requirements. This may sound surprising, but it is actually quite simple. The structure of an EMS, and the self-examination it encourages, can help to reveal hidden opportunities for the kinds of operational changes that will yield reductions in the number of regulatory requirements that are applicable. The fewer the toxic inputs used, for example, the fewer regulatory requirements apply. Federal facilities may reduce permitting or reporting requirements, as well as waste management costs, through the substitution of regulated chemicals or process changes arrived at through the self-examination encouraged by an EMS.

Facilities can also use an EMS to reduce overlaps in existing compliance systems as well as to seek cost-effective pollution prevention measures. (See Chapter 6.) For example, a facility may be able to eliminate some internal reporting requirements or duplicate permit requirements or inspections. Other incentives for adopting an EMS can include lower support costs for integrated environmental, safety, and health (ESH) programs. Properly implemented, an integrated ESH program can improve internal efficiency, provide better risk management (due to identification and closure of gaps in assuring compliance), and allow greater agility of ESH operations during times of rapid change. Each of these has the potential to directly reduce regulatory obligations, without speculating about responses from regulators, because fewer regulations will apply.

**"At a meeting of the Management Committee in mid-1992, a committee member passed out a 'Special Report' from a periodical, saying: 'These are new sentencing guidelines. There is a section that allows for a reduction in a monetary fine if the company has a compliance program to prevent and detect violations of law. Show me that we have such a formalized program or do what is necessary to develop one.' This formed a catalyst in the development of Ocean State Power's environmental management system."
– Ocean State Power, Burrillville, Rhode Island**

If a facility's environmental programs are currently in compliance, its managers may not realize that some form of an EMS is already in place, or may not see the advantage of adopting a more formal EMS. Some managers may question

whether making any changes might risk falling out of compliance. Hopefully, managers can be educated to understand an EMS as managing applicable requirements more cost- and mission-effectively.

EMS AS A COMPLEMENT TO COMPLIANCE

Ensuring that a facility is in compliance with environmental laws and regulations is an essential component of an EMS. Given that compliance with environmental requirements is a baseline, an EMS can and should be viewed as a complement to a “command and control” compliance approach. Although an EMS focusses on management systems and not legal compliance per se, an EMS can be an important tool in an agency’s compliance system by improving the management of activities and programs that have significant environmental impacts. As a practical matter, an EMS should be integrated with a compliance system. An EMS is consistent with, and should not diminish or interfere with, a facility’s compliance management system.

Policies such as the 1991 U.S. Sentencing Commission Sentencing Guidelines have had an enormous impact in encouraging development and implementation of compliance management systems. The Guidelines cite the existence of "an effective program to prevent and detect violations of law" as the basis for substantial reductions in criminal sentences for those convicted. Further, they state that "the hallmark of an effective program to prevent and detect violations of law is that the organization exercised due diligence in seeking to prevent and detect criminal conduct by its employees and other agents."

Due Diligence

As a mitigating factor, due diligence includes numerous elements consistent with an EMS:

- **Developing standards and procedures to prevent noncompliant behavior that is not in conformity with the management program.**
- **Allocating responsibility to oversee conformance to these management standards and procedures.**
- **Training to communicate the standards, procedures and roles.**
- **Using appropriate disciplinary mechanisms to encourage consistent enforcement of the standards.**
- **Monitoring and auditing systems to implement the standards.**
- **Correcting the nonconformance and prevent future nonconformance.**

Source: U.S. Sentencing Commission

An EMS is also consistent with the 1995 EPA Self-Policing Policy which sets forth conditions for reductions in civil penalties and limited liability for criminal prosecution. Systematic discovery of violations through a compliance management system (due diligence) or environmental audit is a condition for elimination of gravity-based penalties. EPA has applied the Self-Policing Policy in many cases, most of which resulted in substantial moderation or waiver of penalties.

EPA continues to emphasize the important role of a compliance management system, and recognizes that an effective EMS can complement the compliance management system. EPA's Code of Environmental Management Principles (CEMP) has a strong specific emphasis on compliance, and, since the late 1980s, civil multimedia compliance investigations conducted by the National Enforcement Investigations Center (NEIC) have made a special effort to identify causes of

noncompliance. Noncompliance is most often caused by the lack of an EMS or an EMS that doesn't work. By participating in follow-up enforcement actions, NEIC developed 12 detailed criteria (shown in the accompanying box) for a compliance-focused EMS. The first five criteria are the most critical in assuring compliance. The last seven serve to sustain and improve the system. A complete description of the NEIC EMS Criteria is provided in Appendix B.

NEIC EMS Criteria

- 1. Management Policies and Procedures**
- 2. Organization, Personnel, and Oversight of EMS**
- 3. Accountability and Responsibility**
- 4. Environmental Requirements**
- 5. Assessment, Prevention, and Control**
- 6. Environmental Incident and Noncompliance Investigations**
- 7. Environmental Training, Awareness, and Competence**
- 8. Planning for Environmental Matters**
- 9. Maintenance of Records and Documentation**
- 10. Pollution Prevention Program**
- 11. Continuing Program Evaluation**
- 12. Public Involvement/Community Outreach**

5 - INNOVATIVE PROGRAMS

EPA is exploring several innovative programs to encourage improved environmental performance. This chapter describes these and other programs and explains how adopting an EMS can make your facility a better candidate for the innovative programs and flexible approaches that are being offered.

THREE INNOVATIVE EPA PROGRAMS

EPA has developed three innovative programs to encourage environmental improvements. They are: the Environmental Leadership Program (ELP), Project XL, and Environmental Management Reviews (EMRs). Each of these programs can provide technical assistance and useful ideas to facilities chosen to participate. The ELP and Project XL also require a substantial level of commitment by an agency or facility.

► **Environmental Leadership Program (ELP):** The ELP recognizes and encourages innovation and improved environmental performance. ELP facilities must still comply with the same regulations as non-ELP facilities. However, they are eligible for fewer inspections and a self-correcting period for violations. Other benefits can include expedited permitting, longer permitting cycles, and others deemed appropriate by EPA and States.

Under the ELP, a facility must have a fully-implemented EMS and conduct periodic EMS and compliance audits. Audits encourage facilities to look for ways to go “beyond compliance.” Two Federal facilities, McClellan Air Force Base in Sacramento, California, and the Puget

Sound Naval Shipyard in Bremerton, Washington, participated in ELP's pilot phase.

Puget Sound Naval Shipyard

ELP demonstrated that disposal of certain waste materials at the shipyard should not be restricted under the Toxic Substances Control Act (TSCA). Benefits to the shipyard include:

- **Annual recycling of 2,500 tons of steel currently covered by TSCA**
- **Eliminating up to seven tons of solvent emissions resulting from TSCA analysis**
- **Establishing a process to evaluate innovative pollution prevention measures.**

In addition to the EMS requirement, an ELP facility must participate in community outreach and employee involvement programs to foster a more collaborative atmosphere. Facilities are also expected to participate in a mentoring program designed to transfer knowledge and innovation to smaller or less advanced facilities. ELP has been adopted as the "Model Installation Program" described in Executive Order 12856, and parent Federal agencies must endorse EPA's Code of Environmental Management Principles (CEMP).

► **Project XL:** Project XL (eXcellence & Leadership) is a national pilot program of 50 projects selected by EPA for testing innovative ways of achieving more effective health and environmental protection. Several of the projects selected include use of an EMS as an important element of their approach.

Project XL is similar to the ELP in encouraging innovation. However, Project XL differs in one important respect: a facility accepted for Project XL may receive permission to go outside the current regulatory structure in order to achieve a superior result at a lower cost than could be achieved by strict adherence to regulation. In addition to superior results and lower cost, Project XL projects involve:

- Less reliance on paperwork
- Stakeholder support
- Innovative approaches and preference for multi-media pollution prevention
- Capability of transfer to other facilities/sites
- Technical and administrative feasibility
- Clear performance objectives and data requirements
- No shifting of risk/pollution to other population/media.

XL Projects are undertaken through a negotiated agreement among the facility, state, EPA region, EPA program office (e.g., Air, Water, etc.), and other stakeholders.

► **ENVVEST:** The Department of Defense (DOD) and EPA have jointly sponsored the ENVVEST initiative, which is DOD's program to implement regulatory reinvention activities such as Project XL. ENVVEST allows regulators to grant relief from requirements that provide little additional health protection or environmental improvement. In return, the installation commander, in coordination with the regulator, funds high payback pollution prevention projects with the money originally programmed to satisfy the "waived" requirements.

► **Environmental Management Reviews:** An Environmental Management Review (EMR) is an evaluation of a Federal facility's program and management systems to determine how well the facility has developed and implemented specific environmental protection programs to ensure compliance. EMRs are consultative technical assistance visits intended to identify root causes of environmental performance problems. EMRs are voluntary and are usually initiated by the recipient agency or facility. They generally focus on one or two components of a fully developed EMS, such as:

- Organizational structure
- Environmental commitment
- Formality of environmental programs (e.g., P2, auditing, compliance)
- Internal and external communication
- Staff resources, training, and development
- Program evaluation, reporting, and corrective action
- Environmental planning and risk management.

**"Very positive experience. The EMR helped tremendously. It was a great learning experience. EPA identified the positives and the areas needing improvement. The EMR energized our Environmental Program."
– Federal Facility Environmental Manager, EPA Region 1**

An EMR is not a compliance audit or an inspection, but any violations observed during the EMR are communicated to the facility separately from the EMR report. Facilities generally have 60 days to correct the violations, and are eligible for substantial penalty relief.

OTHER PROGRAMS

► **Department of Energy's Integrated Safety Management System:** As part of its program to improve and standardize the Department of Energy's management of environment, safety, and health efforts, the Secretary of Energy issued Safety Management Policy, P 450.4 on October 15, 1996. This policy established the Integrated Safety Management System which provides a formal, organized process to plan, perform assess, and improve the safe conduct of work in the Department of Energy (DOE). The system encompasses all DOE facilities. Throughout the policy statement the term safety is used synonymously with "environment, safety and health" to encompass protection of the public, the workers, and the environment. Implementing an Integrated Safety Management System is a requirement for contractors operating DOE sites, per DOE procurement regulations at 48 CFR (DEAR) 970.2303-2(a).

DOE senior management has recognized that an environmental management system, such as ISO 14001, can play an important role in articulating the environmental component of the Integrated Safety Management System.

The Seven Guiding Principles of Integrated Safety Management at DOE

1. *Line Management Responsibility For Safety.* Line management is directly responsible for the protection of the public, the workers and the environment. As a complement to line management, the Department's Office of Environment, Safety and Health provides safety policy, enforcement, and independent oversight functions.

2. *Clear Roles and Responsibilities.* Clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at all organization levels within the Department and its contractors.

3. *Competence Commensurate with Responsibilities.* Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

"An important aspect of integrated safety management is protection for the environment and for public health. To achieve this at DOE sites, DOE's Office of Environment, Safety and Health provides technical assistance to sites to encourage use of voluntary standards, such as the ISO 14001 Environmental Management Systems Standard. Meeting this standard requires a systematic approach to managing the Department's environmental liabilities and holds promise of improving environmental protection at lower costs."

-Peter Brush, DOE Acting Assistant Secretary, Environment, Safety and Health

4. *Balanced Priorities.* Resources shall be effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment shall be a priority whenever activities are planned and performed.

5. *Identification of Safety Standards and Requirements.* Before work is performed, the associated hazards shall be evaluated and agreed-upon set of safety standards and requirements shall be established, which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

6. *Hazard Controls Tailored to Work Being Performed.* Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work being performed and associated hazards.

7. *Operations Authorization.* The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established and agreed-upon.

Core Functions of Integrated Safety Management at DOE

1. *Define the Scope of Work.* Missions are translated into work, expectations are set, tasks are identified and prioritized, and resources are allocated.

2. *Analyze the Hazards.* Hazards associated with the work are identified, analyzed, and categorized.

3. *Develop and Implement Hazard Controls.* Applicable standards and requirements are identified and agreed-upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.

4. *Perform Work Within Controls.* Readiness is confirmed and work is performed safely.

5. *Provide Feedback and Continuous Improvement.* Feedback information on the adequacy of controls is gathered, opportunities for improving the definition and planning of work are identified and implemented, line and independent oversight is conducted, and , if necessary, regulatory enforcement actions occur.

Other DOE Initiatives

Implementation of Integrated Safety Management, including a variety of environment, safety and health initiatives, is ongoing at most DOE sites. Several sites are integrating EMS concepts or principles into their ISMS programs, including Hanford, Brookhaven, and Lawrence Livermore National Lab. Other sites have implemented third-party-certified EMSs which are compatible with and supportive of the ISMS; these include Savannah River, the Kansas City Allied Signal Plant and the Waste Isolation Pilot Project. Other facilities, such as the Idaho National Engineering and Environmental Lab and Oak Ridge's Office of Waste Management are developing EMSs which will be compatible with and supportive of their site's ISMS when completed.

► **Compliance Agreements**: Sometimes Federal agencies or facilities negotiate a legal agreement with regulatory authorities concerning environmental conditions at a facility. Site contractors may also be party to the agreement. These agreements generally address a particular state or Federal regulation, specify actions to be taken to address the conditions that led to the agreement, and lay out milestones to be met by the agency operating the site.

Some agreements, however, are broader in scope and address an agency's overall management of a facility. For example, the Department of Energy (DOE) has a number of Federal Facility Agreements or Tri-Party Agreements (the parties consisting of DOE, EPA, and the state regulatory agency). Negotiations for these agreements can be very lengthy and consider conditions unique to Federal facilities, such as:

- Status as an extension of the Federal government, including Congressional oversight and budgetary responsibilities
- Size, scope, and complexity of operations
- Use of uncommon materials, such as munitions and radionuclides
- Mission, particularly when it involves national security issues.

An EMS can increase the confidence of regulators, and provide the agency with the flexibility to efficiently address its environmental performance. Inclusion of EMS language in an agreement with regulatory authorities may become a basis for demonstrating improved environmental performance, and for negotiating legitimate flexibility in applying regulations.

► **Environmental Process Improvement Center (EPIC)**: In 1991, McClellan Air Force Base, EPA Region 9, and California EPA formed the Environmental Process Improvement Center (EPIC) as a means of improving relationships and environmental performance. EPIC has alliances with private industry, government offices, academia, and the public. It conducts projects and research in the areas of technology, research, training, and support.

EMS Partnerships

Consider developing an EMS partnership with another agency, a university, or a private sector company! Recently, the National Oceanic and Atmospheric Administration (NOAA) expressed an interest in having DOE conduct EMS audits at their facilities, similar to those conducted at DOE's own facilities.

Examples of Some State EMS Activities

A number of states have been actively exploring EMS in various pilot studies and cooperative efforts. Examples include:

- California is exploring opportunities to use ISO 14001 for permit consolidation zones, individual pilots, technology validation, and in partnership with other states and countries.
- Colorado is including EMS as one of several criteria for "Environmental Leader" status in a proposed program that would reduce oversight and provide financial incentives to companies who excel in environmental performance.
- Indiana is co-sponsoring with U.S. EPA a series of pilot projects for small- and medium-size thermoset plastic manufacturers in Indiana. Each pilot project will facilitate implementation of a verifiable EMS and look at possible regulatory flexibility along the lines of EPA's "cleaner, cheaper, smarter" approach.
- ISO may be one of several criteria to become a Michigan Clean Corporate Citizen. Being a CCC will entitle companies to certain regulatory flexibility.
- North Carolina has developed a state-wide ISO 14000 working group to review issues related to regulatory relief, policies, and linkages with other activities.
- Pennsylvania DEP's P2 & Compliance Assistance Web site has a section devoted to ISO 14000.
- Washington is testing a pilot program in which an approved EMS may substitute as an alternative to pollution prevention planning requirements. Draft criteria for the EMS are being developed and will be pilot tested at several facilities.
- Wisconsin has held workshops around the state on ISO 14000 and EMS. A statewide advisory committee convened by the Department of Natural Resources is looking at changing regulatory approaches to companies that become ISO-14000 certified.

► **Multi-State Working Group:** A number of State environmental regulators are participating in a Multi-State Working Group on EMS to explore the utility of EMS, especially those based substantially on ISO 14001. Some of these activities are generally described in the box above, and the overall effort is becoming a partnership with Federal regulators.

► **Municipality Demonstration Project:** EPA's Office of Water (OW) has undertaken a demonstration project to assess the effectiveness of EMS for municipalities and counties. As part of the OW project, ISO 14001 EMSs are being implemented at the municipal level, encompassing public works projects, corrections facilities, electric generating facilities, waste management, municipal government, and Publicly Owned Treatment Works (POTWs - municipally owned waste water treatment facilities). EPA will use the final reports and data generated by the two-year demonstration projects to determine if and how the EMS improved environmental performance, increased the use of pollution prevention, and improved compliance.

EMS MAKES YOU A BETTER CANDIDATE

Having an effective EMS can make an agency a better candidate for innovative programs and flexible approaches because it will address important concerns regulators may have about your operations. These concerns include:

► **Commitment to Responsible Environmental Protection:** An EMS can help an agency show that it is forward-thinking, proactive, and not dependent on crisis management in its environmental programs. An EMS can also be a critical factor in establishing and demonstrating due diligence in the event of non-compliance.

► **Opportunity to be a Leader in the Public and Private Sectors:** An agency with an EMS can become a leader by allowing one or more of its facilities to be used as pilots/models, and hosting observers whose organizations want to improve their performance.

► **Clear Accountability:** An EMS clearly assigns responsibility and accountability within the organization. Demonstrating such accountability is more persuasive to regulatory authorities than simply referring to an organizational chart. An EMS allows agencies to get out of the "trust us" business because responsibility and accountability are demonstrated.

► **Commitment to Continuous Improvement and Pollution Prevention:** The EMS emphasis on continuous improvement and pollution prevention means that the basis for EMS effectiveness never declines. This point may be useful in justifying the resources needed for agency programs including pollution prevention.

6 - POLLUTION PREVENTION

In many ways, an EMS represents the alliance between the "green" ethic of pollution prevention and the "quality" ethic of management systems. Both incorporate concepts such as long-range planning, continuous improvement, system control, well-being of workers and customers, avoidance of "crisis management," importance of innovation, and measurement of results.

During the past decade, the Federal government has made pollution prevention a way of doing business. Federal agencies are demonstrating leadership in the adoption and application of pollution prevention policies and methods. A number of environmental policies, statutes, and executive orders bolster this commitment to pollution prevention (see box on next page).

For many Federal agencies and facilities, pollution prevention is recognized as a vital element of environmental management. Nevertheless, pollution prevention often takes place in localized and small-scale efforts within individual facilities. This chapter describes how Federal facilities can capitalize on the relationship between EMSs and pollution prevention (P2) to enhance the effectiveness and success of their environmental programs.

Pollution Prevention:

"...any practice which reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal; and any practice which reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants."

– Pollution Prevention Act of 1990

EMS AND P2: A STRONG PARTNERSHIP

The benefits of pollution prevention can be significantly enhanced through an EMS framework. By incorporating pollution prevention concepts into day-to-day operations, a facility can more easily extend its pollution prevention program to all elements of facility management. This approach can ensure broad awareness of pollution prevention issues, enhance relevant training and communication, and strengthen the facility's ability to recognize and capitalize on pollution prevention opportunities. Some of the benefits of integrating pollution prevention and management systems are:

P2 in the Federal Government

- ▶ **Pollution Prevention Act of 1990:** Establishes P2 as national environmental policy. Codifies the pollution prevention hierarchy of approaches to waste management: source reduction is the preferred approach, followed by recycling, treatment, and disposal as the last resort.
- ▶ **Executive Order 12856: Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements:** Directs Federal agencies to develop pollution prevention strategies that commit each agency to incorporate P2 through source reduction in facility management and use P2 as the primary means of achieving and maintaining compliance. Requires preparation of facility-specific P2 plans for reducing releases and transport of toxic chemicals by 50% by 2000. Establishes the Federal Government Environmental Challenge Program, under which EPA developed the Code of Environmental Management Principles for Federal Agencies (CEMP).
- ▶ **Other Executive Orders** on ozone-depleting substances, energy efficient computers, energy and water conservation, and recycling and waste reduction (see Executive Orders 12843, 12844, 12845, 12873, and 12902) promote Federal leadership in pollution prevention and environmental stewardship.

▶ **Regulatory and Other Commitments Including CEMP:** Sixteen Federal agencies have committed to using pollution prevention as the primary means of achieving regulatory compliance. Many of these agencies and their individual facilities have set specific pollution prevention, energy efficiency, or water conservation goals in addition to regulatory requirements with which they must comply. An EMS that integrates regulatory requirements with additional pollution prevention goals helps the facility identify or create opportunities for improvement, make their evaluation more systematic and predictable, and sustain improvements once they are implemented. The facility will meet both sets of goals more swiftly and effectively. For agencies that have endorsed the CEMP, which stresses pollution prevention as a core principle, tying P2 into an EMS can help show that the agency is meeting its voluntary obligation under the CEMP.

▶ **Health and Risk:** Federal managers do not knowingly put their workers in danger, but too often it takes an accident or injury to uncover the risks associated with the use of hazardous materials. P2 meshes with risk reduction because the most dangerous materials are often the most difficult to dispose of. The EMS framework requires that a facility examine all of its environmental activities, products, and services (not just those that are regulated) to identify the ways in which those activities affect the environment, including workers, the public, and ecosystems. Incorporating this review in an EMS can help a facility lower its risk profile and manage liabilities before crisis situations arise.

► **Cost-Effectiveness:** The prospect of not having to pay direct and indirect costs associated with waste disposal, permitting, and environmental reporting has always offered a strong incentive for pollution prevention. Still, facility-specific pollution prevention efforts are often localized, small-scale, reactive, and not coordinated with other organizational activities. In many cases the costs of waste management are charged to general overhead costs, so their impact is not fully appreciated by managers of individual activities. Combining pollution prevention with an EMS can help to ensure that pollution prevention considerations are identified and considered throughout a facility's waste management process. Through integration and improved efficiency, a well-designed EMS can enhance savings, as well as remove environmental management costs from overhead.

One way to highlight pollution prevention is to "map" each process, identifying the factors that control the work and assigning costs to each contributing activity, even if it is just for paperwork. An adhesive manufacturer found that losses from production shutdowns during certain training activities were many times the amount of the small training budget. Experimenting with material handling processes allowed the facility to eliminate its storage tanks and associated training courses entirely.

► **Public Confidence:** Federal facilities operate on the basis of public trust. Unfortunately, in the past, that stewardship was sometimes forgotten, resulting in a legacy of contamination at Federal sites and shaken public confidence. A pollution prevention ethic shows a commitment to responsible waste management and limiting additional environmental damage. An EMS further builds public confidence by demonstrating that a facility understands the connection between its management practices and activities that affect the environment. It helps demonstrate that an agency's primary mission can be fully compatible with environmental stewardship responsibilities. An effective EMS also contains elements of public outreach, encouraging facilities to be more open in communicating with the public.

**With an EMS, DOE can "provide stakeholders and customers with real evidence of performance in the environmental management arena that won't be subject to second-guessing or gainsaying. We're going to be very effective stewards of the environment under our control and our stakeholders will see that."
– Dr. Tara O'Toole, DOE Assistant Secretary**

► **Sustainable Development:** Although it may be difficult for any agency or facility to precisely measure its contribution to sustainable development, robust pollution prevention programs can improve management of natural environmental resources. Judicious use of resources is also in keeping with the public policies which encourage husbanding of resources to ensure their continued availability to future generations. An EMS can help facilities maintain focus on these long-term considerations.

USING EMS TO EXTEND POLLUTION PREVENTION

How can an EMS be used to integrate pollution prevention more thoroughly with other environmental activities? Several EMS elements can be particularly useful in strengthening pollution prevention programs. In addition, it can be easier to transfer successful pollution prevention approaches from one site to another if a unifying management framework is established. The EMS provides just such a framework. With an EMS, facilities will be able to identify more quickly those approaches that could be adapted to their unique conditions. This benefit can also apply to private-sector innovations, which agencies will be able to evaluate for applicability to their own sites. The potential for incorporating pollution prevention into each EMS element is described in more detail below. Federal managers should keep in mind that adopting an EMS approach does not — and should not — require building programs from scratch. It should encourage adapting existing programs to work within the EMS framework to the fullest extent possible.

**"We view pollution prevention as our best approach to compliance."
– McClellan Air Force Base, Sacramento**

► ***Environmental Policy:*** Adopting an EMS can make an agency's commitment more powerful by institutionalizing pollution prevention as a priority concern. All too often, pollution prevention gets "lost in the shuffle" when circumstances demand more attention for items deemed mission- or time-critical. By emphasizing pollution prevention as a basic foundation, an EMS can raise the profile of pollution prevention and help ensure that a P2 approach is adopted throughout an agency's activities.

► ***Identifying Environmental Activities and Impacts:*** Agencies can take advantage of the process of identifying environmental interactions and impacts to seek out and conduct pollution prevention opportunity assessments in areas that may not have been targeted previously for such assessments. Similarly, opportunities for advancing sustainable development and reducing use of energy and natural resources can be pursued.

► ***Identifying Legal and Other Requirements:*** By tracking environmental legislation and other requirements, agencies can better integrate pollution prevention with environmental program activities. Early consideration of forthcoming regulatory changes allows facilities and agencies to respond with pollution prevention solutions and perhaps avoid regulatory thresholds and reporting requirements. Because many agencies already have internal networks that provide for review and comment on both internal and external (e.g., regulatory) requirements, pollution prevention issues can be incorporated into agency protocols.

► **Setting Environmental Objectives and Targets:** This EMS element encourages setting specific, measurable environmental performance measures (e.g., emission levels), which is already the policy of many Federal agencies. Facilities can use this element to more thoroughly integrate pollution prevention measures into their overall environmental program goals.

► **Developing and Implementing Environmental Management Programs:** This element provides agencies with an opportunity to examine their environmental programs, including pollution prevention. Agencies should ensure that these activities are integrated and that communication is maintained across the program. In addition, measures should be included that allow new activities to be assessed for their environmental aspects and impacts. Facilities should consider incorporating pollution prevention-related concepts such as life cycle analysis, total cost accounting, and design for the environment into their analyses.

► **Assigning Responsibility and Accountability:** Clear lines of responsibility need to be established so that everyone knows who has the authority to make decisions, and who is accountable for those decisions. Having a clear line of responsibility for pollution prevention can encourage suggestions for improving the program. Assigning responsibility and accountability should be consistent with agency policy.

► **Monitoring and Measurement:** Accurate and reliable performance measures are needed to assess the effectiveness of an organization's environmental performance and the effectiveness of the EMS. Similarly, adequate performance measures are essential to evaluating the performance of pollution prevention programs. Evaluating the performance of both the pollution prevention program and the EMS is needed to ensure there is a good fit between the two. Program Improvements can be driven by the feedback obtained through performance evaluation, so personnel should be encouraged to consider innovative ways to improve both the pollution prevention program and the EMS. Many Federal agencies and facilities already perform periodic self-assessments and thus already have a foundation upon which performance evaluation can be conducted.

ISO 14001 AND POLLUTION PREVENTION

The ISO 14001 EMS Standard supports pollution prevention. However, there are differences in the definitions of P2 in ISO 14001 and the Pollution Prevention Act. ISO includes recycling and treatment in its definition of preventing pollution, while the Pollution Prevention Act defines pollution prevention as essentially equivalent to source reduction, with recycling and treatment considered less desirable alternatives.

Federal agencies and facilities should be aware of this distinction, as adherence to the ISO version of P2 may not be considered effective enough to be the "primary means of achieving and maintaining compliance," as required under Executive Order 12856.

Another potential discrepancy is that ISO requires organizations to consider "significant" impacts in setting goals, but does not define what "significant" impacts are. Federal agencies should be aware that what an organization considers as a "significant" impact for ISO purposes may not be the same as a facility's activities and impacts that are subject to regulatory requirements. In light of this, a Federal agency EMS should assume compliance as a baseline, and consider compliance with legal and regulatory requirements to be a "significant" impact when setting goals.

An Example of Linking EMS and Pollution Prevention: The Washington State Department of Ecology (DEQ) is implementing an Environmental Management System Alternative to Pollution Prevention Planning (EMS Alternative). Facilities required to prepare a State-required Pollution Prevention Plan or Five Year Plan Update can meet these requirements by submitting documentation that they have an operating EMS in place that meets a set of pre-defined pollution prevention criteria. A facility in conformance with ISO 14001 qualifies for the EMS Alternative, but must address pollution prevention as defined by DEQ/Pollution Prevention Act.

Despite these distinctions, ISO and other EMS approaches can be powerful tools in augmenting pollution prevention programs. ISO 14001 reaches beyond the single facility level by highlighting environmental stewardship -- concern for the goods and services that it both uses and produces. An organization is expected to communicate with its suppliers and contractors regarding the environmental standards and requirements that accompany the purchase of those products. ISO is also developing standards for life-cycle assessments (ISO 14040, 14041, 14042, 14043) that can help in the procurement of environmentally-friendly products.

7 - NATIONAL ENVIRONMENTAL POLICY ACT

Federal managers already have in place a set of tools to intended to identify the environmental impacts of Federal activities, to consider these impacts fully in decisionmaking, and to reduce these impacts. These tools (including procedures, data, and methods of analysis) have been developed over the past 25 years in response to the requirements of the National Environmental Policy Act of 1969 (NEPA). In developing an environmental management system, Federal managers have the opportunity to build on the strengths of these tools, and to address some of their shortcomings.

Understanding the strengths and limitations of NEPA

Since the National Environmental Policy Act was signed in 1970, Federal agencies have increased their analyses of the impacts of proposed actions and of alternatives to those actions. Public involvement in agency decisionmaking has increased. Numerous analytic tools have been developed, and an extensive environmental database has been developed. At the same time, the requirements of NEPA are perceived by many managers a hurdle to be overcome, rather than an opportunity for improved decisionmaking.

The National Environmental Policy Act opens with a broad environmental policy statement recognizing “the profound impact of man’s activity on the interrelations of all components of the natural environment.”

NEPA also identifies requirements for Federal agencies. Federal agencies are directed to integrate the natural sciences, the social sciences, and the environmental design arts in planning and decisionmaking, through a “systematic, interdisciplinary approach” (section 102(2)(A)). And for major Federal actions, agencies are directed to prepare a detailed statement on the impact of the proposed action, and of alternatives to the proposed action (section 102(2)(C)). It is this latter requirement, and the substantial case law derived from it, which has led to the preparation of thousands of Environmental Impact Statements over the years.

This “action-forcing” mechanism in section 102(2)(C) is focussed on decisionmaking on major proposed Federal actions. NEPA does not require – nor was it intended to when it was written– the creation of a system to manage, in an environmentally sound way, ongoing activities.

So while NEPA does not provide a full-blown environmental management system for Federal agencies, it does provide analytical tools and data which will be invaluable in developing an management system. How can you take advantages of these existing resources?

► **Fully integrate your existing NEPA activities into your Environmental Management System.**

Use Existing Staff Expertise. Your agency has staff who have developed expertise in analyzing and documenting environmental impacts under NEPA, and who know your agency NEPA policies and procedures. Involve them in the development and implementation of your EMS. Educate them about how an EMS differs from NEPA, and let them apply their existing skills and knowledge.

Use Existing Procedures. Build into your EMS your agency's procedures for identification of Federal actions, for identification of potential impacts, and for identification and analysis of alternatives.

Incorporate Your Public Involvement Activities. Federal agencies are committed (by law and policy) to involve the public in decisionmaking. Your management system will describe how decisions get made, and how things get done; incorporate your existing public involvement activities into the system.

► **Build on your past NEPA analyses.**

Identify Impacts. Review the environmental impact statements and environmental assessments covering your facilities and activities, to help identify your environmental aspects and impacts. These won't be the only sources you will need, but they should give you a big head start.

Use Existing Impact Assessment Tools. Build on the skills and methodologies developed in NEPA analyses over the past 25 years to establish relationships between actions and potential effects.

A "Significant" Caution. "Significant impacts" are a key concept in both NEPA and the ISO 14001 standard. Under NEPA, if potential impacts are "significant," then an environmental impact statement is required. Under ISO 14001, the organization must identify which environmental aspects have "significant" impacts, and consider these impacts when they establish their objectives and targets. *But the threshold for "significant" is not necessarily the same.* Under NEPA, there is extensive case law and guidance addressing when impacts are "significant." Under ISO 14001, the organization makes the determination. As a practical example, a Federal agency may have a project or activity for which it has made a formal "Finding of No Significant Impact" but it may still identify "significant" impacts to address in its environmental management system.

While the threshold may be different, some of the factors to be considered in assessing significance are common to both NEPA and ISO 14001, including: direct and indirect impacts, cumulative impacts, and pollution prevention.

► **Use the development of your EMS to streamline and enhance your NEPA processes.**

Mitigation. Enhance the follow-through on commitments you have made to mitigate environmental impacts. Identify the assumptions about mitigation in your NEPA analyses, and the commitments to mitigation made in your Records of Decision. Reflect these in your goals, your performance measures, or your monitoring as part of your ongoing environmental management system.

Streamlining and Integration. As you integrate your NEPA procedures and activities into your EMS, you may discover opportunities for improving them. Do so! It would be far more work to start from scratch to invent new ones.

Top Management Involvement. NEPA was intended to lead to better decisions, and a better environment. Integrating NEPA into your environmental management system can ensure that the right information gets to top management in a timely way to ensure that it is considered when important decisions are made.

Conclusion

As a result of their long experience with conducting analyses under NEPA, Federal agencies already have in place many elements which will constitute part of their environmental management system. By incorporating these, they will enhance their emerging environmental management system. And in turn, the incorporation of NEPA into an integrated management system, with top management support, can only enhance the achievement of NEPA's lofty goals.

8 - AUDITS & CERTIFICATION

The use of audits is familiar to every Federal agency. Simply stated, an audit is a tool with which an organization can examine its performance. Audits are often a means to identify any violations of procedure or regulation, while collecting information to determine performance trends. Although audits are conducted in many areas of operation (e.g., finance, quality, documentation) and can take a variety of forms, this chapter focuses on the use of audits within the context of an EMS. System audits are a common element of EMS standards and critical to the goal of continuous improvement.

ISO 14001 AND EMS AUDITS

The ISO 14001 EMS Standard specifically requires periodic EMS audits (for the internal information of the organization) as a condition of conformance with the standard, indicating the importance placed on system evaluation by ISO. In addition, a facility that wishes to be registered as conforming to the ISO standard must undergo a formal audit by a recognized, independent auditor who conducts a thorough review comparing the facility EMS to the ISO standard.

No Federal agency has required (or, as of this publication date, announced plans to require) third-party certification of its facilities. The Department of Defense (DOD) has specifically stated that it does not endorse nor support payment for third-party certification of ISO 14001. Although DOD is not pursuing/funding third-party certification, one of the goals of the DOD ISO 14001 EMS pilot cost/benefit study is to determine if the benefits of implementing an ISO EMS outweigh the costs (including third-party certification). On the other hand, the Department of Energy has left decisions regarding third-party certification up to facility managers.

Generally, the common practice has been for individual facilities (and/or contractors) to decide that adopting ISO 14001 meets their mission, environmental, and productivity goals. Federal facilities that do decide to seek third-party certification when implementing ISO 14001 will need to include provisions for periodic EMS audits. Agencies or facilities may also want to consider encouraging their contractors and suppliers to become ISO-registered. Such encouragement might take the form of offering performance incentives in negotiating contracts or giving preference to registered bidders in contract awards. In both cases, Federal managers and procurement officers will need to clearly and precisely define such terms as "consistent with," "conforming to," or "principles of" ISO 14001. These details may be especially important in engaging contractors and vendors who must compete on price to win Federal contracts. Therefore, it can be to a Federal agency's considerable advantage

Guidelines for Environmental Auditing

- **ISO 14010 - General Principles of Environmental Auditing**
- **ISO 14011 - Audit Procedures - Auditing of Environmental Management Systems**
- **ISO 14012 - Qualification Criteria for Environmental Auditors**

to understand how EMS audits work, what they evaluate, and when they are being performed properly.

WHAT'S IN AN AUDIT?

Federal agencies considering implementing an EMS at their facilities need to be aware of the differences between EMS audits (and management audits in general) and other types of audits (e.g., compliance audits). Management system audits concentrate on managerial tools and structures (systems, procedures, policies, trained personnel, lines of communication, etc.) that support the organization's activities, rather than on the performance of the activities themselves.

EMS Audit

"...a systematic and documented verification process to objectively obtain and evaluate evidence to determine whether an organization's environmental management system conforms to the environmental management system audit criteria set by the organization, and communication of the results of this process to management."

– ISO 14001

Because an EMS focusses on management systems, the fact that an EMS audit does not directly measure environmental performance can make it seem less valuable to a budget-strapped Federal facility manager. However, this is precisely why an EMS audit can be so important. The EMS itself can improve efficiency and cost-effectiveness by providing a reliable, predictable framework in which to carry out environmental activities. By incorporating systematic procedures for diagnosing weaknesses in environmental performance and taking corrective action, an EMS audit serves as preventive maintenance.

Keeping underlying management systems running smoothly is important in avoiding breakdowns in any management system. Breakdowns often have immediate, serious, and unpredictable consequences, undermining hard-won relationships with regulators and stakeholders, and costing much more than periodic audits would have involved.

An EMS audit is not a regulatory compliance audit. There is a wealth of information available on compliance audits, and these are familiar to Federal managers active in the environmental field. Compliance audits focus on activities that are required by regulation, such as:

- Required procedures and plans (e.g., spill response), and documentation relating to on-site procedures
- Permit conditions and whether discharges or emissions are within those conditions specified by law
- Waste storage areas to examine labels and segregation of incompatible wastes
- Hazardous waste characterizations and manifests
- Laboratory samples to ensure that proper test methods are used
- Monitoring wells and other field sampling operations
- Training records for hazardous site operators
- Use of hazardous materials in daily operations
- Status of enforcement actions or consent orders.

n EMS audit looks at the facility from a different perspective, concentrating on the management systems that support the activities examined during a compliance audit. For example, the EMS auditor might look at:

- Procedures that address: updating of permits;
- monitoring of discharges and emissions;
- handling of hazardous waste and materials;
- handling of laboratory samples; and
- sampling and other field activities
- Facility training program
- Environmental aspects identified by the facility (should include a multimedia examination of all emissions and waste streams that affect the environment)
- Procedures for addressing non compliance, enforcement actions, or consent orders
- Assignment of responsibility for each area examined.

“You don't get continuous improvement if you don't have a way to check. The (ISO 14001) Standard requires that you have an internal check. You could call upon people in your own organization, you could call upon an external source for doing an internal check. You need to be able to see where is the system working and, perhaps more importantly, where at any given time is the system not working. Management, then, has to have a review of the whole thing.”
– Mary McKiel, Vice Chair, U.S. Technical Advisor Committee

EMS and compliance audits can thus be thought of as complementary. The EMS furnishes the blueprint. The EMS audit verifies the blueprint. The compliance audit examines how regulatory requirements were addressed. (It is likely that the procedures developed for conducting compliance audits will also be evaluated during the EMS audit.)

Compliance audits, which focus more closely on regulatory requirements, can lead to enforcement actions. This does not mean that agencies should view EMS breakdowns as insignificant because they don't have major regulatory implications. First, even though implementation of an EMS is not required by law, discovery of noncompliance requires prompt disclosure and correction. Second, an EMS can help to make regulatory compliance more sustainable and predictable through program integration, eliminating the "crisis management" approach to compliance. Therefore, any breakdown identified by an EMS audit may be seen as early warning of potential compliance problems.

FEDERAL AGENCY AUDIT PROGRAMS

Some Federal agencies have internal environmental audit capabilities. The U.S. Postal Service's Environmental Compliance Quality Assessment Reviews (QAR), the U.S. Air Force's Environmental Compliance and Management Program (ECAMP), and DOE's Environmental Management Assessment program are just a few that have been implemented over the past decade. As might be expected, EMS auditing among civilian Federal agencies is more limited, with audit programs more focused on regulatory compliance issues rather than management practices.

**"Even though environmental liabilities are widespread throughout the Federal sector, most agencies - aside from the Department of Energy and the Department of Defense - do little or no environmental auditing. Obstacles and disincentives impede the further development of environmental auditing in civilian agencies. GAO's work...indicates that environmental auditing at civilian agencies is hampered because many agencies lack the necessary environmental expertise."
— General Accounting Office**

EPA has incorporated evaluations of management practices into both volumes of its *Generic Protocol for Conducting Environmental Audits of Federal Facilities* (EPA 300-B-96-012A&B). The first volume addresses regulatory compliance. The second volume discusses a more holistic approach to auditing management practices, and includes protocols for EMS audits. There is also a companion guidance document, *Environmental Audit Program Design Guidelines for Federal Agencies* (EPA 300-B-96-011). DOE's *Protocols for Conducting Environmental Management Assessments of DOE Organizations* (DOE/EH-0326) includes eight disciplines which are based on key characteristics and elements of effective environmental management systems.

Several related environmental codes and programs, while not EMS standards, also stress the importance of EMS evaluation. For example, the Chemical Manufacturers Association (CMA) Responsible Care (R) program has developed a Management Systems Verification component. The Global Environmental Management Initiative's (GEMI) Total Quality Environmental Management (TQEM) approach stresses audits as a core element of the "Plan-Do-Check-Act" cycle. GEMI has also developed a self-assessment checklist for implementing ISO 14001.

Federal facilities can use any of these sources in evaluating their environmental systems. However, the EPA and DOE documents are specifically targeted to Federal facilities and can complement the more general ISO Standards 14010, 14011, and 14012.

CERTIFICATION: SELF-DECLARATION VS. THIRD-PARTY

Federal facilities implementing the ISO 14001 EMS standard have several options for certification. They may announce or "self-declare" when they reach full implementation of the standard. Alternatively, they may be formally reviewed by an independent or "third-party" registrar trained and accredited by ISO or one of its member bodies (e.g.,

the American National Standards Institute (ANSI)). A facility qualifies to be ISO 14001 registered if it can demonstrate that its EMS *conforms to* the standard. (The term "conformance" is distinguished from "compliance," reflecting comparison to a voluntary standard rather than a regulatory requirement.) Choosing between the options of self-declaration or third-party certification can depend on credibility and cost:

► **Credibility:** Many people believe that an objective, independent assessment of conformance with an internationally recognized standard will go further in persuading Congress and the public that an agency is committed to responsible environmental protection than will internal assurances. This may eventually be true. However, it is not fully clear at this point how much value ISO 14001 certification carries. A facility's stakeholders, regulators, and Congressional authorizers and overseers will need to be convinced of the value added by third-party certification. Regardless whether self-declaration or third-party certification (or neither) is pursued, having an EMS audit build upon a compliance audit should improve credibility with the public and other stakeholders.

"We generally tell our clients that a single major non-conformance or five minor non-conformances within a single element of the [ISO] Standard will be sufficient to deny certification."

– Brent Backus, TUV Rheinland of North America, Inc.

► **Cost:** Hiring an independent third-party to conduct an assessment will cost some money. Exactly how much is not clear, but would depend on the size of the facility and the nature of its activities. EMS auditors can provide estimates based on information provided to them. Certification will also need to be revisited periodically.

Managers should be aware that there are some significant concerns regarding the confidentiality of information gathered during conformity assessments. For this reason and because the benefits and costs are not yet clear, Federal managers may want to defer a decision concerning third-party certification. Managers may also, however, decide it is appropriate and prudent to conduct an EMS audit and implement an EMS irrespective of issues concerning confidentiality and decisions regarding third-party certification.

9 - AN INVITATION TO ENVIRONMENTAL LEADERSHIP

Environmental management systems offer a unique opportunity for Federal facilities to step forth as environmental leaders. EMSs hold promise for both internal and external benefits. Internally, an EMS can help establish a systematic, cost-effective approach to the management of environmental interactions. Externally, an EMS demonstrates the seriousness and commitment of the Federal agency to improved environmental performance.

Over the next few years, reliable data on EMS performance will be forthcoming. If, as we expect, the data show that EMS implementation leads to improved performance that equals or exceeds the traditional “command-and-control” approach, the EMS approach will gain credibility and broad support as a powerful means to enhance compliance and performance.

The next few years will be an interesting and exciting time for Federal agencies as the EMS approach gains momentum. In the Federal Government, some facilities have adopted and implemented an EMS, while other are doing EMS pilot projects to better determine the impact of a systems approach to environmental management. Hopefully, this Primer has been helpful in improving your understanding of EMSs and has pointed out some issues to be considered. Your input on issues that need more consideration and input on how useful this document has been are valued. Appendix E is an Evaluation Form that can be used to provide this feedback. Please take a moment to complete and return the form. Your assistance and input are appreciated.

APPENDIX A - SELECTED RESOURCES

Standard-Setting Bodies

Web Sites

www.iso.ch (International Organization for Standardization)

www.nist.gov (National Institute of Standards and Technology)

www.ansi.org (American National Standards Institute)

www.csa.ca (Canadian Standards Association)

www.scc.ca/iso14000 (Standards Council of Canada)

www.quality.org/html/iso14000.html (ASQC Documents)

GETTING STARTED/General Interest

www.epa.gov (EPA) - General EPA Web site with access to environmental information from all EPA offices. The Office of Water has made available an implementation guide for Small Business, developed in collaboration with NSF International. The *Implementation Guide for the Code of Environmental Management Principles for Federal Agencies (CEMP)* (EPA-315-B-97-001) is available from EPA's Federal Facilities Enforcement Office.

www.iso14000.net (ANSI/GETF GlobeNet) This site has considerable information available. Some information is free; many elements, such as copies of ISO standards, require payment.

www.iso14000.com (ISO 14000 InfoCenter sponsored by and accessible through the Environmental Industry Web Site, www.enviroindustry.com) - background information, lists of certified companies, training and business opportunities, and links to articles.

www.mgmt14k.com (Management Alliances, Inc.) - provides background on ISO 14000 and articles on benefits and challenges of the ISO series.

www.isogroup.iserv.net (ISO 9000/QS-9000 Support Group) - offers products and services for understanding and implementing ISO 9000, QS-9000, and ISO 14000. Publishes a newsletter, *Continuous Improvement*, and offers a discussion area. Some products and services are discounted or only available to members.

www.gemi.org (Global Environmental Management Initiative)

www.cmahq.com

the Responsible Care codes. Also lists CMA member companies, some of which have additional detail on Responsible Care implementation on their own home pages.

www.ends.co.uk (Environmental Data Services)

www.ceem.com (CEEM Publications)

www.dep.state.pa.us/dep/deputate/pollprev/Tech_Assistance/Toolbox/ISO14001/ISO14000.htm (Pennsylvania Department of Environmental Protection)

www.stoller.com (S.M. Stoller Co.) - one of the first ISO 14000 sites, offers a significant amount of background on the ISO 14000 series.

Newsletters

CEEM Integrated Management Systems Update, CEEM Information Services.

Business and the Environment ISO 14000, Cutter Information Corp.

ISO 14000 News & Views (S. Wayne Rosenbaum)

Continuous Improvement (ISO 9000/QS-9000 Support Group)

Books & Reports

Bhat, Vasanthakumar, *Total Quality Environmental Management: An ISO 14000 Approach*, Quorum Books, to be published in 1998.

Block, Marilyn, *Implementing ISO 14000*, American Society for Quality, 1996.

Cascio, Joseph, Gayle Woodsie, and Philip Mitchell, eds., *ISO 14000: The New International Environmental Management Standards*, McGraw Hill, 288 pp., 1996.

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Clements, Richard, *Complete Guide to ISO 14000*, Prentice Hall, 336 pp., 1996.

GEMI, *TQEM: The Primer*, GEMI Publications, 25 pp., 1992.

Hemenway, Caroline and Mary McKiel, *ISO 14000 Questions and Answers*, CEEM Information Services and ASQC Quality Press, 53 pp., 1997.

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Jackson, Suzan, *ISO 14001 Implementation Guide: Creating an Integrated Management System*, Wiley & Sons, 1997.

Johnson, Perry, *ISO 14000: The Business Manager's Complete Guide to Environmental Management*, Wiley & Sons, 256 pp., 1997.

- Johnson, Perry, *ISO 14000 Road Map to Registration*, McGraw Hill, 208 pp., 1997.
- Kuhre, W. Lee, *ISO 14001 Certification: Environmental Management Systems: A Practical Guide for Preparing Effective Environmental Management Systems*, Prentice Hall, 378 pp., 1995.
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- Nestel, Glenn ed., Joseph Delrossi, and Andrew Ullman, *The Road to ISO 14000*, Irwin Professional Publications, 1996.
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- Richie, Ingrid and William Hayes, *A Guide to Implementation of the ISO 14000 Series on Environmental Management*, Prentice Hall, to be published in 1997.
- Rothery, Brian, *BS 7750: Implementing the Environment Management Standard and the EC Eco-Management Scheme*, Ashgate Publishing Company, 1993.
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- Tibor, Tom and Ira Feldman, eds., *Implementing ISO 14000: A Practical, Comprehensive Guide to the ISO 14000 Environmental Management Standards*, Irwin Professional Publishing, 1996.
- U.S. Department of Energy, *Guidelines for Strategic Planning*, DOE/PO-0041, January 1996.
- U.S. EPA, Federal Facilities Enforcement Office, *Implementation Guide for the Code of Environmental Management Principles for Federal Agencies*, EPA-315-B-97-001, 42 pp., March 1997.
- Von Zharen, W.M., *ISO 14000: Understanding the Environmental Standards*, Government Institutes, 1996.
- Wever, Grace, *Strategic Environmental Management: Using TQEM and ISO 14000 for Competitive Advantage*, Wiley & Sons, 1996.
- Willig, John, ed., *Environmental TQM*, McGraw Hill, 340 pp., 1993.

Willig, John and Phillip Marcus, eds., *Moving Ahead With ISO 14000: Improving Environmental Management and Advancing Sustainable Development*, Wiley & Sons, 304 pp., 1997.

Zottola, Vincent and Vincent Zottola Jr., *The ISO 14001 Implementation Tool Kit*, Richard Irwin, 200 pp., 1997.

MEASURING PERFORMANCE

Web Sites

www.llnl.gov/PBM/handbook - DOE handbook of techniques/tools for measuring performance

labs.ucop.edu/library.html (University of California) - self assessment and annual review manual

www.nortel.com/habitat (Northern Telecom) - example of industrial site, contains annual environmental report information, a description of Nortel's EMS, performance indicators.

www.seattle.battelle.org/p2online/eshweb.htm (Battelle) "Using the Internet for Environmental Benchmarking" contains a description of corporate sites that provide environmental information on company practices in pollution prevention, design for the environment, management systems, and product stewardship.

www.benchnet.com (The Benchmarking Exchange) - offers information exchange with organizations in all business sectors.

www.well.com/user/benchmark/tbnhome.html (The Benchmarking Network) - similar in purpose to The Benchmarking Exchange, but geared more toward administrative topics and full-service research and consulting.

Books & Reports

Electric Power Research Institute, 1996. *Environmental Performance Measurement: A Framework for the Utility Industry*. Prepared by Decision Focus Incorporated. EPRI TR-106078, Research Project 3006-10; 9030-02. Palo Alto, CA.

Epstein, Marc, *Measuring Corporate Environmental Performance: Best Practices for Costing and Measuring and Effective Environmental Strategy*, Irwin Professional Publishing, Chicago, 1996.

Executive Enterprises Publications, *Measuring Environmental Performance: Selecting Measures, Setting Standards and Establishing Benchmarks*, Executive Enterprises Publications Co., New York, 1993.

Kuhre, W. Lee, *ISO 14031—Environmental Performance Evaluation*, Prentice Hall, 200 pp., 1997.

U.S. General Accounting Office (GAO). 1996. *Executive Guide: Effectively Implementing the Government Performance and Results Act*. GAO Report Number GAO/GGD-96-118, June 1996.

U.S. Department of Energy, *Guidelines for Performance Measurement*, DOE G 120.1-5, June 1996.

U.S. Environmental Protection Agency, *Environmental Management System Benchmark Report: A Review of Federal Agencies and Selected Private Corporations*. (EPA-300R-94-009, 1994)

Wever, Grace, *Total Quality Environmental Management: An Implementation Framework and Assessment Matrix Using the Baldrige Categories and Criteria*, Government Institutes, 1995.

COMPLIANCE AND REGULATIONS

Memorandum from Earl E. Devaney, Director, EPA Office of Criminal Enforcement, "The Exercise of Investigative Discretion," January 12, 1994.

U.S. Department of Justice, *Factors in Decisions on Criminal Prosecutions for Environmental Violations in the Context of Significant Voluntary Compliance or Disclosure Efforts by the Violator*," July 1, 1991.

United States Sentencing Commission, "Chapter 8 - Sentencing of Organizations," Part A, General Application Principles, *United States Sentencing Commission Guidelines Manual*, (effective November 1, 1991).

U.S. Environmental Protection Agency, "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations Final Policy Statement," 60 *FR* 66706, December 22, 1995.

INNOVATIVE PROGRAMS

Web Sites and Telephone Services

<http://tis-nt.eh.doe.gov/ism/> (Integrated Safety Management Program at DOE)

<http://www.explorer.doe.gov:1776/htmlsdirectives.html> (DOE Directives)

<http://www.pr.doe.gov/dear.html> (DOE Procurement Regulations)

www.epa.gov/ProjectXL (EPA web page on Project XL, providing an overview, description of specific projects, legal and policy documents, and points of contact)

www.epa.gov/docs/region01/steward/elp/index.html (EPA Region 1 Web site, describing their Environmental Leadership Program)

www.epa.gov/envirosense (EPA's home page from Earth 1, the official environmental information network for EPA)

www.epa.gov/envirosense/oeca/fedfac/fflex.html (EPA Federal Facilities Enforcement Office's home page for information on Environmental Management Reviews (EMRs) and the Code of Environmental Management Principles (CEMP) for Federal agencies)

www.epa.gov/envirosense/elp/index.html (EPA web page for the Environmental Leadership Program (ELP))

For further information on Integrated Safety Management Systems at DOE call Mr. Richard Crowe, Safety Management Implementation Team Phone: 301-903-6214

Project XL fax-on-demand: 202-260-8590

Project XL Information line: 703-934-3239

POLLUTION PREVENTION

Web Sites

iisd1.iisd.ca (International Institute for Sustainable Development) - information on sustainable development. Includes the report "Green Standards: ISO 14000 and Sustainable Development".

Books & Reports

Pacific Northwest Laboratory, *A Proposed Framework for Conducting Pollution Prevention Design Assessments (P2DAs) on U.S. Department of Energy Design Projects*, PNL-10204, , October 1994.

U.S. EPA Federal Facilities Enforcement Office, *Pollution Prevention in the Federal Government: Guide for Developing Pollution Prevention Strategies for Executive Order 12856 and Beyond*, EPA-300-B-94-007, April 1994.

U.S. EPA Federal Facilities Enforcement Office, *Federal Facility Pollution Prevention Planning Guide*, EPA-300-B-94-013, December 1994.

U.S. EPA Federal Facilities Enforcement Office, *Federal Facility Pollution Prevention Project Analysis: A Primer for Applying Life Cycle and Total Cost Assessment Concepts*, EPA-300-B-95-008, July 1995.

U.S. General Accounting Office, *Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach*, GAO/RCED-94-111, August 1994.

AUDITS & CERTIFICATION

Books & Reports

Executive Enterprises Publications, *Measuring Environmental Performance: Selecting Measures, Setting Standards and Establishing Benchmarks*, Executive Enterprises Publications Co., New York, 1993.

Chemical Manufacturers Association, *Responsible Care Management Systems Verification Information Kit*

Environmental Auditing Roundtable (John Willig ed.), *Auditing for Environmental Quality Leadership: Beyond Compliance to Environmental Excellence*, Executive Enterprises Publications, 331 pp., 1995.

Global Environmental Management Initiative (GEMI), *Benchmarking: The Primer*, GEMI Publications, 49 pp., 1994.

Global Environmental Management Initiative (GEMI), *Environmental Self-Assessment Program (ESAP)*, GEMI Publications, 114 pp., 1992.

Global Environmental Management Initiative (GEMI), *ISO 14001 Environmental Management System Self-Assessment Checklist*, GEMI Publications, 54 pp., 1995.

Kuhre, W. Lee, *ISO 14010: Environmental Auditing: Tools and Techniques for Passing or Performing Environmental Audits*, Prentice Hall, 440 pp., 1996.

U.S. Department of Energy, *Protocols for Conducting Environmental Management Assessments of DOE Organizations*, DOE/EH-0326, 60 pp., 1993.

U.S. Environmental Protection Agency, *Generic Protocol for Conducting Environmental Audits of Federal Facilities*. (EPA 300-B-96-012A&B, December 1996)

U.S. Environmental Protection Agency, *Environmental Audit Program Design Guidelines for Federal Agencies*. (EPA 300-B-96-011, Spring 1997)

U.S. General Accounting Office, *Environmental Auditing: A Useful Tool That Can Improve Environmental Performance and Reduce Costs*, GAO/RCED-95-37, April 1995.

APPENDIX B - NEIC EMS CRITERIA

The civil multimedia compliance investigations conducted by the EPA National Enforcement Investigations Center (NEIC) have increasingly involved identifying causes of observed noncompliance. Where investigated, noncompliance most often appeared to be caused by dysfunctional EMSs. Through this work and by participating in followup enforcement actions, NEIC developed criteria for a compliance-focused EMS that have been used as the basis for several of the settlement agreements where EMS improvements were required. To date, NEIC has been directly involved in negotiating five settlement agreements (mostly consent decrees) that address the facility's EMS, and provided consultation on several others. The elements of the NEIC EMS are as follows:

1. Management Policies and Procedures

- a. Organization's Environmental Policy - This must clearly communicate management commitment to environmental performance, including compliance with applicable Federal, state, and local environmental statutes and regulations, including permits (hereafter, "environmental requirements").
- b. Site-specific Environmental Policies and Standards
 - Body of general policies, rules, and procedures for environmental principles and practices.
 - Includes process for developing, approving, and communicating standard operating practices for activities having potentially adverse environmental or regulatory compliance impacts.
 - Clearly identifies organizational responsibilities for maintaining regulatory compliance, including required reporting to regulatory agencies.
 - Includes ongoing means of communicating environmental issues and information to all organization personnel, on-site service providers, and contractors, and receiving and addressing their concerns.
 - Describes and establishes processes to ensure sustained interaction with regulatory agencies, and within the organization (e.g., between the various divisions, contractors, and the Environmental Control Department) regarding environmental issues and regulatory compliance.

2. Organization, Personnel, and Oversight of EMS

- a. Describes, organizationally, how the EMS is implemented and maintained.
- b. Includes organization charts that identify units and individuals having environmental performance and regulatory compliance responsibilities.

- c. Identifies duties, roles, responsibilities, and authorities of key environmental program personnel in implementing and sustaining the EMS (e.g., could include position descriptions and performance standards for all environmental department personnel, and excerpts from others having specific environmental program and regulatory compliance responsibilities).

3. Accountability and Responsibility

- a. Specifies accountability and responsibilities of organization's management, on-site service providers, and contractors for environmental protection practices, compliance, required reporting to regulatory agencies, and corrective actions implemented in their area(s) of responsibility. Also specifies potential consequences of departure from specified operating procedures, including responsibilities (personal and organizational) for civil/administrative penalties imposed as a result of noncompliance.

4. Environmental Requirements

- a. Describes process for identifying, understanding, and communicating environmental requirements to affected organization personnel, on-site service providers, and contractors, and ensuring that facility activities conform to those requirements. Specifies procedures for identifying and obtaining information about changes and proposed changes in environmental requirements, and incorporating those changes into the EMS.

5. Assessment, Prevention, and Control

- a. Identifies an ongoing process for assessing operations, for the purposes of preventing and controlling releases, environmental protection, and maintaining compliance with statutory and regulatory requirements. This shall include monitoring and measurements, as appropriate, to ensure sustained compliance. It shall also include identifying operations and waste streams where equipment malfunctions and deterioration, operator errors, and discharges or emissions may be causing, or may lead to, releases of hazardous waste or hazardous constituents to the environment, or a threat to human health or the environment. Finally, process shall include performing root cause analysis of identified problems to prevent recurring issues.
- b. Describes process for identifying activities that could cause adverse environmental impacts and/or regulatory noncompliance, and where documented standard operating practices need to be developed [see element 1.(b)].
- c. Describes a system for conducting and documenting routine, objective, self-inspections by department supervision and trained staff, especially at locations identified by the process described in (a) above.

- d. Describes process for ensuring input of environmental concerns and requirements in planning; design; and operation of ongoing; new; and/or changing buildings, processes, maintenance activities, and products.
6. Environmental Incident and Noncompliance Investigations
- a. Describes standard procedures and requirements for incident and noncompliance reporting, investigation; and development, tracking, and effectiveness verification of corrective and preventative actions. The procedures shall specify testing of such procedures, where practicable.
7. Environmental Training, Awareness, and Competence
- a. Identifies specific education and training required for organization personnel, as well as process for documenting training provided.
 - b. Describes program to ensure that organization employees are aware of its environmental policies and procedures, environmental requirements, and their roles and responsibilities within the environmental management system.
 - c. Describes program for ensuring that personnel responsible for meeting and sustaining compliance with environmental requirements are competent on the basis of appropriate education, training, and/or experience.
8. Planning for Environmental Matters
- a. Describes how environmental planning will be integrated into other plans developed by organizational subunits, as appropriate (e.g., capital improvements, training, maintenance).
 - b. Requires establishing written goals, objectives, and action plans by at least each operating organizational subunit, as appropriate, including those for contractor operations conducted at the facility, and how specified actions will be tracked and progress reported.
9. Maintenance of Records and Documentation
- a. Identifies the types of records developed in support of the EMS (including audits and reviews), who maintains them and where, and protocols for responding to inquiries and requests for release of information. Specifies the data management systems for any internal waste tracking, environmental data, and hazardous waste determinations.
10. Pollution Prevention Program
- a. Describes an internal program for reducing, recycling, reusing, and minimizing waste and emissions, including procedures to encourage

material substitutions. Also includes mechanisms for identifying candidate materials to be addressed by program and tracking progress.

11. Continuing Program Evaluation

- a. Describes program for periodic, at least annually, evaluation of the EMS, including incorporating the results of the assessment into program improvements, revisions to the manual, and communicating findings and action plans to affected employees, on-site service providers, and contractors.

12. Public Involvement/Community Outreach

- a. Describes a program for ongoing community education and involvement in the environmental aspects of the organization's operations and general environmental awareness.

APPENDIX C - STATE CONTACTS

CALIFORNIA: Bob Stephens
Cal-EPA; Dept. Of Toxic Substances Control
510-540-3003

COLORADO: Parry Burnap
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive North
Denver, CO 80222-1530
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INDIANA: Marc Hancock
Indiana Dept. of Environmental Management
Office of Pollution Prevention and Technical Assistance
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Indianapolis, IN 46206-6015
317-233-1043; 317-233-5627 fax
email: mhanc@opn.dem.state.in.us.

MARYLAND: Mitch McCalmon
Department of Environmental Protection
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Baltimore, MD 21224
410-631-3772; 410-631-3936 fax

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Environmental Assistance Division
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Ohio EPA, Office of Pollution Prevention
P.O. Box 1049
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614-644-2813; 614-728-1245 fax
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PENNSYLVANIA: ISO 14000 Partnerships
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Department of Environmental Protection
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Harrisburg, PA 17105-2063
email: Barkanic.Robert@a1.dep.state.pa.us

VIRGINIA: Harry E. Gregori, Jr.
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Richmond VA 23240-0009

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Dept. of Ecology
206-649-7086
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WISCONSIN: Tom Eggert
Wisconsin DNR
608-267-9700
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University of Wisconsin-Extension
Wayne P. Pferdehirt, P.E., AICP
U. of Wis., Solid & Hazardous Waste Education Center
610 Langdon Street, Room 529,
Madison, WI 53703-1195
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WYOMING: Pat Gallagher
Wyoming P2 Program
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307-777-6105; 307-777-5973 fax
email: pgalla@missc.state.wy.us

APPENDIX D - EVALUATION FORM

WE VALUE YOUR OPINION

The *EMS Primer for Federal Facilities* was written to give Federal employees an **understanding** of Environmental Management Systems and **useful** ideas to help implement an EMS. How well did the *Primer* do this for you? Please rate understandability and usefulness using the following scale:

1 = not at all 2 = a little 3 = somewhat 4 = a lot 5 = very much X = N/A

Please rate the <i>Primer's</i> chapters	Understandability	Usefulness
1. Introduction	1 2 3 4 5 X	1 2 3 4 5 X
2. Getting Started	1 2 3 4 5 X	1 2 3 4 5 X
3. Performance Measures	1 2 3 4 5 X	1 2 3 4 5 X
4. Compliance and Regulations	1 2 3 4 5 X	1 2 3 4 5 X
5. Innovative Programs	1 2 3 4 5 X	1 2 3 4 5 X
6. Pollution Prevention	1 2 3 4 5 X	1 2 3 4 5 X
7. NEPA	1 2 3 4 5 X	1 2 3 4 5 X
8. Audits & Certification	1 2 3 4 5 X	1 2 3 4 5 X

In general, chapters

9. Are the right length	1 2 3 4 5 X
10. Cover the right topics	1 2 3 4 5 X
11. Examples clarify the text	1 2 3 4 5 X
12. Will be useful in your job	1 2 3 4 5 X
13. Overall usefulness of the <i>Primer</i>	1 2 3 4 5 X

Updates to the *Primer* are planned.

What did you like best? _____

What would you change (e.g., more topics, examples, etc.)?

And About You:

Are you:

Responsible for:

a Federal employee? Y N

regulatory compliance? Y N

a Federal Contractor? Y N

pollution prevention? Y N

an ES&H Specialist? Y N

implementing an EMS? Y N

a Facilities Manager? Y N

implementing the CEMP? Y N

HQ Program staff/manager? Y N

NEPA? Y N

Other _____

If you would like a copy of the updated Primer and other EMS material, please include your name and address below.

Name _____ Agency/Org. _____

Address _____

Telephone _____ Fax _____ Email _____

Send to: Environmental Protection Agency
Federal Facilities Enforcement Office
401 M St. S.W.
Washington, DC 20460

Attn: Priscilla Harrington
Fax - 202- 501-0069

or

Department of Energy
Office of Environmental Policy & Assistance (EH-41)
1000 Independence Ave. S.W.
Washington, DC 20585-0119

Attn: Carolyn Douglas
Fax - 202-586-0955